Minnesota Medicine

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THE DRUG ADDICT

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Saint Paul, Minnesota

DRUG addiction in its broadest sense applies to any individual who either for physical or psychological reasons has developed a compelling need for certain drugs.

A physician's wife, a bed-ridden invalid because of her many psychosomatic symptoms, was rehabilitated after prolonged hospitalization to the extent that she again attended to her home duties and became an asset to her community. That was eight years ago. However, she still needs and demands her 5-grain placebo capsule for sleep. Without it, she develops her own abstinence symptoms of fear, apprehension, nervousness and insomnia. Psychologically she is a drug addict to the same degree as the alcoholic who has to drown his sorrows or the morphine addict who requires his hypodermic to meet his personality difficulties.

Habit-forming drugs may be classified into two categories: the narcotic group, and the various types of sedatives and hypnotics. Since many recent articles in the literature have emphasized the dangers and accumulative effects of the bromides, this drug is gradually losing its popularity. However, the various hypnotics are amply replacing them with greater detriment to the patient in many instances. So many physicians still find it less time-consuming to give patients some sedative for their many psychosomatic complaints than to devote a little energy to the finding of a brief explanation of their functional symptoms and their significance. With psychosomatic medicine forging to the foreground, and with more thorough scientific training in this field, the medical profession is becoming more conscious of this important phase of daily practice.

According to Federal statutes, the narcotic drugs are opium and its derivatives, cocaine, marihuana, heroin and demerol, and addiction to these substances is legally narcotic drug addiction. For many years pharmaceutical laboratories have attempted to develop a pain-relieving non-habit-forming drug as a substitute for morphine. Both pantopon and demerol were so considered when first introduced to the medical profession. Unfortunately, the number of narcotic addicts due to pantopon and demerol is rapidly increasing. Recently, a similar drug, methadon (6 dimethylamine-4-4-diphenyl-heptanone-3), has been developed as an effective analgesic. In a recent article published by the United States Public Health Service,[4] it states that "it is the unanimous opinion of all who have been concerned with the evaluation of the addiction liability that methadon like morphine is dangerous with respect to habituation." Another new analgesic drug, AN-148, recently introduced, was given to 106 patients for relief of pain without any evidence of addiction.[1] However, in a more recent case of brachial plexus tumor, a definite dependency to this drug developed.[8]

Himmelsbach[3] stated that addiction to the opiate drugs embraces three related phenomena: (1) tolerance or the gradual decrease in the effect produced by the repeated administration of a drug; (2) physical dependence, which is manifested by the appearance of a characteristic illness if the drug is withheld, and (3) habituation or psychic dependence, which implies an intense desire for

President's address, Minnesota Academy of Medicine, January 14, 1948.

From the Department of Psychiatry and Neurology, University of Minnesota Medical School.

the repetition of pleasurable effects associated with the use of a drug.

In the non-narcotic group are alcohol, paraldehyde, the various barbiturates, especially veronal, amphetamine or benzedrine, rarely ether by inhalation, and similar drugs. These differ in the main from the narcotic group in that they do not produce a physical dependence and their rapid withdrawal is accompanied by very slight abstinence symptoms.

Monroe and Drell[7] made a special study of the prison population at the U. S. Disciplinary Barracks, Fort Benjamin Harrison, Indiana, to determine the number of benzedrine addicts. Two hundred and sixty-four inmates (24.4 per cent) indicated they had used benzedrine, either in pill form or by chewing the strips from benzedrine inhalers. One hundred and thirty had taken it prior to enlistment in the army or prior to confinement. In a room of one of the guards, over 300 empty inhalers were found which had been sold to the inmates for from 75 cents to $1.50 per tube. The three main reasons for taking the drug were: it made the time go faster, it made them feel happier, and it made them talkative. Withdrawing the drug precipitated weakness, depression, gastrointestinal disturbances and tremor. Four of the inmates developed ideas of reference and hallucinations.

During the past year we had one patient who took a large amount of benzedrine and thyroid (dose undetermined) for a period of five weeks and developed an acute maniacal state and died from exhaustion. A postmortem examination revealed a marked hemorrhagic pulmonary edema. A second patient, who averaged 150 mg. of benzedrine daily for at least four months, developed delusions of infidelity about his wife and periods of viciousness and uncontrollable temper.

According to Hambourger,[2] more than 1,200,000,000 grains of barbiturates were sold in the United States in 1936. U. S. Census Bureau figures show that there were 171 suicides and 165 so-called accidental deaths due to the barbiturates during that same year. These cases are cited to illustrate the extensive use of some of these drugs, frequently considered harmless, and to point out their detrimental effects. The pernicious habit, quite prevalent among students, of taking benzedrine in the morning to keep alert for lectures and examinations, and of taking barbiturates at night to produce sleep, may cause serious consequences and should be definitely discouraged.

Certain types of individuals are more prone to become addicts than are others. Stille[11] has well stated that those who have a propensity to employ some artificial means of promoting the flow of agreeable thoughts, of emboldening the spirit to perform acts of daring, or of steeping in forgetfulness the sense of sorrow, are more likely to embrace narcotics and fall a victim of their enslaving effects than are those who do not possess these propensities.

In 1938, Kolb and Ossenfort[6] classified addicts into six main groups. In 1925, Kolb[5] had suggested a somewhat similar grouping based on a personality study of 230 addicts which included life history, heredity, personality defects, emotional reactions, intelligence and other characteristics.

Kolb's classification consisted of the following major categories:

1. Normal individuals, accidentally addicted because of illness.
2. Psychopathic diathesis.
3. Psychoneurosis.
4. Psychopathic personality without psychosis.
5. Inebriates in whom excessive alcoholic indulgence acts as a precipitating factor in the addiction.
6. Drug addiction associated with a frank psychosis, either organic or functional.

On the basis of this classification, Pescor[9] made a study of 1,036 patients admitted to the United States Public Service Hospital in Lexington, Kentucky, during the fiscal year July 1, 1936, to June 30, 1937.

He found that only 3.8 per cent came under Group 1, normal individuals accidentally addicted.

Group 2, the psychopathic diathesis, comprised the largest number (54.5 per cent). Their most frequent reason for addiction was curiosity and association with addicts.

Group 3, those with psychoneurosis, comprised 6.3 per cent. Therapeutic necessity caused by somatic complaints were the main excuse for their addiction.

Group 4, the psychopathic personalities, comprised 11.7 per cent, and their main reason was curiosity and association.

The fifth, or inebriate, group comprised 21.9 per cent, and the typical inebriate individual resorted to the drug as a means of sobering up after

alcoholic sprees. This psychopathic impulse which develops his craving for alcohol also compels him to take narcotics.

In the sixth group, there was only one patient suffering from senility, who took the drug to "set his mind at rest."

In a general way, there are two types of drug addicts: (1) the emotionally stable individual who acquires the addiction accidentally, and whose normal personality make-up will be re-established, after he recovers from his physical illness and is relieved from his drug addiction; and (2) the psychopathic individual who becomes an addict through curiosity or association, or as a sequence to his inadequate personality. The prognosis as to relapses and the method of treatment are radically different in these two groups.

Drug addiction is a universal problem. In order to determine its extent in Ramsey County, I reviewed the Ancker Hospital records. The total number admitted to Ancker Hospital from 1932 to 1947 (15 years) was 265. A few of these were nonresidents and some were admitted more than once. One hundred eighty-three were addicted to morphine, twenty to heroin, six to dilaudid, and thirteen were cocaine addicts. Six were habituates to paraldehyde and forty-seven to the various barbiturates. In only two per cent was the addiction acquired because of illness. To this number should be added the various drug addicts admitted to the private hospitals in Ramsey County. This information was not available. As most of the Ancker Hospital patients obtained their narcotic drugs from peddlers, each patient was thoroughly questioned as to the source of supply. In only one instance was this obtained. Evidently these patients were fearful that if any information were given their supply would be discontinued after their discharge from the hospital. One of our most interesting cases was a man of sixty-one, who was given a prescription for laudanum (Tr. Opii) for abdominal pain at the age of twenty. For forty-one years he took laudanum, up to 6 ounces daily, until the Harrison Narcotic Act was passed. He then entered Anckер Hospital voluntarily. With a gradual reduction treatment, he made a satisfactory recovery and remained well.

During the past fifteen years, we hospitalized and treated in our private practice forty-two drug addicts and had an opportunity to review the records of fifty-seven others—a total of ninety-nine narcotic addicts. Among this group were business and professional men, college graduates and farmers; eighty-eight were men, and eleven women. These differed in the main from the Ancker Hospital group in that because of favorable financial circumstances they could more readily obtain their narcotic drugs from prescriptions or similar sources. Nine of our women patients had received their first narcotic prescription or hypodermic from the family physician because of migraine headaches, severe menstrual pains, sciatica, duodenal ulcer and similar disorders. One of our demerol addicts, who developed the addiction while attending her sister who required demerol because of a malignancy, had been given, during previous two years, pantopon at least twice monthly for migraine headaches. Among the group of eighty-eight male patients the youngest was twenty-seven years old, the oldest eighty-one, and the average was forty-eight years. Morphine was used by every patient at some time during the period of addiction. In addition, eighteen resorted to dilaudid at irregular intervals, ten to demerol, five to cocaine, six to pantopon, two to heroin and six to codeine. The largest dose in two cases was 12 grains of morphine daily; twenty-six used alcohol to excess, and twenty-nine required hypnotics regularly. Eleven wives of these eighty-eight patients developed the narcotic habit instigated by their husbands. Only one of these wives was hospitalized under our supervision with her husband. Like the social drinker, many addicts love companionship.

The most oustanding difference between this group and any other group that has been studied is the fact that fifty-one (over 50 per cent) gave some physical cause for their addication, compared to 3.8 per cent or even less in other groups. Perhaps because of their better education and more secure environment, they rationalized and obtained some moral comfort in an attempt to justify their addiction. This attempt to utilize minor ailments as an etiologic factor is itself suggestive evidence of their psychopathic personality. Headache, rheumatism, arthritis, hernia, hay fever, asthma, frequent colds and hemorrhoids were some of the causative illnesses stated. Severe attacks of kidney stone, intestinal hemorrhages, lightning pains of tabes and malignancy were among the serious diseases given, and were perhaps justifiable reasons to develop a narcotic ad-

diction. Only twenty-nine (about 33 per cent) gave some emotional causative factor, such as nervousness, home and financial worries, overwork and experimental desire. In the remaining nineteen cases, no reasons were given by the patient for the addiction. When we consider all these etiologic factors in addition to the twenty-six who were alcoholic and the twenty-nine who required hypnotics, it would appear that, regardless of education or environment, the psychopathic personality types have the greatest tendency to develop drug addiction.

Observations of this comparatively small group of private patients conform to the statistical study by Pescor[10] of 100 male and 100 female patients admitted to the U. S. Public Health Service Hospital, Lexington, Kentucky. He found that the male addicts began the use of narcotics through association and curiosity (and I might add for minor ailments) and were inclined to use more than one kind of narcotic drugs. The female group became addicted for the relief of some painful or distressing physical condition and generally confined itself to the use of morphine.

According to Federal regulations, physicians are not permitted to dispense narcotics for patients except for definite diseases discovered during the examination of the patient. This excludes the indiscriminate writing of prescriptions to drug addicts drifting into physicians' offices. During the past year, a narcotic addict touring Minnesota was given seven dilaudid prescriptions for various amounts by seven different physicians during a period of two weeks. The trail of this individual was investigated by the Federal Narcotic Agents, to the embarrassment of several of these physicians.

The treatment of a drug addict cannot and should not be attempted unless he is willing to be hospitalized under proper regime and control, either voluntarily or through an order from the Probate Court. The period of hospitalization should be at least three months. It has been our custom to use the gradual reduction method. It is associated with less physical discomfort and pain, complications are very infrequent, and the patient is more co-operative and more willing to continue with the program, an important factor with patients voluntarily hospitalized. Frequently these patients are irritable, demanding and unreasonable. They are often undernourished and require high caloric diets and vitamins to improve their physical condition. Tonic doses of insulin are beneficial. Sedatives should be given as necessary to alleviate the many functional complaints and symptoms. We have found it very satisfactory to give sedatives in plain capsules, which enables one to lessen the dose gradually without altering the size of the capsule. Frequently, these patients are familiar with all the known sedatives and hypnotics, and recognize them by the color of the capsule.

The most important phase of the treatment is to re-educate the individual, to increase his ability to endure discomfort, to teach him to exercise more self-control, to correct his habit of taking some medication whenever he is unhappy or uncomfortable, to assist him in the readjustment of some of his social and economic problems and in his rehabilitation. The danger and tendency to a relapse should be fully explained to him, for the "cock-sure" attitude is always a serious and uncertain one. After discharge from the hospital these patients further require careful supervision and reassurance for several months at least, to assist them in maintaining their proper morale and co-operation.

At the best, when treating psychopathic personalities, the future is always uncertain, and only with prolonged and encouraging guidance can one anticipate permanent results.

Through the efforts of the late Herman Johnson, for many years chairman of the Public Policy Committee of the Minnesota State Medical Association, in conjunction with the excellent supervision of the Minnesota State Board of Medical Examiners and its attorney, Manley Brist, Minnesota holds a unique position for the care of its physicians who are unfortunate enough to become drug addicts. It is difficult to understand why any physician should become addicted to narcotics, being fully aware of the dangers of and the distressing effects from such an addiction, besides the risk of being deprived of his medical license. The fact that the drug is so easily accessible, the mistaken belief that an occasional hypodermic to relieve fatigue or mental distress is harmless, and the egotistical attitude that one can deceive the Federal narcotic agents, are probably the main reasons for the initiation of the narcotic addiction.

Any physician licensed in the State of Minnesota and detected as a narcotic addict by the Fed-

(Continued on Page 503)

THE MORE COMMON METHODS OF INGUINAL HERNIA REPAIR

A Comparison of the Recurrence Rates

DAVID SANDERSON, M.D., and CARL O. RICE, M.D.
Minneapolis, Minnesota

IN the preparation of this article, the different techniques, suture materials and anatomic structures used in hernia repair, as described in a large series of reports, have been studied in order to compare them and to determine, if possible, the most suitable method of repair. Several other aspects of hernia will be discussed, such as the time of recurrence, type of recurrence, recurrences in the young and aged, and also the procedure used by one of us in St. Barnabas Hospital, Minneapolis.

Techniques

The most common method of repair of inguinal hernia has been the Bassini technique, introduced in 1890, in which the internal oblique and transversus abdominis muscles are sutured to Poupart's ligament under the cord. The sac is ligated high. There have been many other methods used since then. They differ from the Bassini operation in the placement of the cord and in the use of different anatomic structures for closing the defect. The more common variations are the Halsted I, placing the cord subcutaneously; the Halsted II and Ferguson, with the cord deep to the internal oblique; the E. Wyllys Andrews, with imbrication of the external oblique around the cord; Bloodgood's rectus muscle or flap closure; Edmund Andrews' tucking of the transversalis fascia; McArthur and Gallie fascial strips; Wangensteen's pedicle flap, and the McVay Cooper's liagment repair. By a comparative study we have hoped to determine what method should be used in the repair of inguinal hernia. Only reports in which most of the cases were followed by physical examination are included. A follow-up by letter is not reliable, as shown by Taylor, and by our experience.

Bassini

Bassini's operation consists primarily of high ligation of the sac and suturing of the internal oblique and transversus abdominis muscles to Poupart's ligament under the cord (Fig. 1). Results from this technique are indicated in Table I.

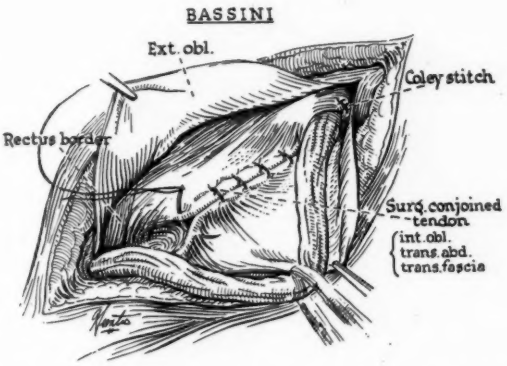

Fig. 1. Bassini operation. The floor of the canal is closed with interrupted stitches by suturing the surgical conjoined tendon to Poupart's ligament.

TABLE I. RECURRENCE RATE—BASSINI

	No.	Recurrence	Per Cent Recurrence	Follow-up
Indirect Inguinal Hernia				
Shelley (1940)	972	56	6.8	9 mos.-10 yrs.
Coley, B. L. (1924)	332	28	8.7	6 mos.-over
Erdman, S. (1923)	532	17	3.2	3 mos.- 7 yrs.
	1,836	101	Av.: 5.5	
Direct Hernia				
Shelley (1940)	94	11	11.7	9 mos.-10 yrs.
Erdman, S. (1923)	185	29	15.6	3 mos.- 7 yrs.
Fallis (1936)	127	11	8.6	2 yrs.-over
	406	51	Av.: 12.5	
Recurrent Hernia				
Shelley (1940)	59	12	20.0	

Halsted I

In Halsted's first operation the cord was transplanted subcutaneously above the external oblique aponeurosis. The internal oblique muscle was incised transversely for a short distance at the internal ring and the cord moved into the incision. The edge of the internal oblique was then sutured to Poupart's ligament under the cord. The eternal oblique then was imbricated under the cord, thus eliminating the external ring completely (Fig. 2). At first, Halsted excised the larger veins of the cord. However, later he discontinued this pro-

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Presented before the Minneapolis Surgical Society, November 6, 1947.

cedure because of the high incidence of atrophy of the testicle and hydrocele. The recurrence rate from this procedure is indicated in Table II.

HALSTED I.

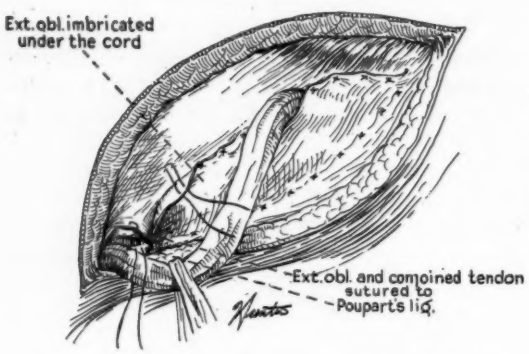

Fig. 2. Halsted I operation. All layers of the abdominal wall are imbricated under the cord. The external ring is obliterated.

HALSTED II

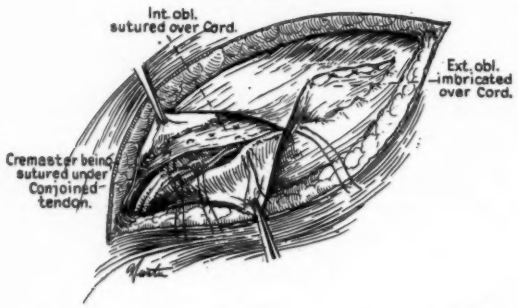

Fig. 3. Halsted II operation. All layers of the abdominal wall are imbricated over the cord. The internal ring is obliterated.

TABLE II. RECURRENCE RATE—HALSTED I

	No.	Recurrence	Per Cent Recurrence	Follow-up
Indirect Inguinal Hernia				
Shelley (1940)	179	16	9.2	
Bloodgood (1899)	238	15	6.2	6 mos.-10 yrs.
Taylor (1920)	19	7	36.8	6 mos.-20 yrs.
	436	38	Av.: 8.7	
Direct Hernia				
Shelley (1940)	81	14	16.9	
Taylor (1920)	20	5	25.0	
Glenn & McBride (1936)	32	2	6.26	6 mos.-2 yrs.
Erdman, S. (1923)	64	10	15.6	
	197	31	Av.: 15.7	
Recurrent Hernia				
Shelley (1940)	8*	3	37.5	
	16†	6	37.5	
Glenn & McBride (1936)	20	6	30.0	
Erdman, S. (1923)	17	4	24.0	
	61	19	Av.: 31.0	

*Indirect.
†Direct

Halsted II

In 1903, Halsted described his second operation in which the cord is placed deep to the internal oblique muscle. The cremasteric muscle and cord are sutured deep under the internal oblique muscle with interrupted mattress stitches, and the free border of the internal oblique is sutured over the cord to the Poupart's ligament. The external oblique is imbricated above this (Fig. 3). The internal ring is obliterated.

FERGUSON

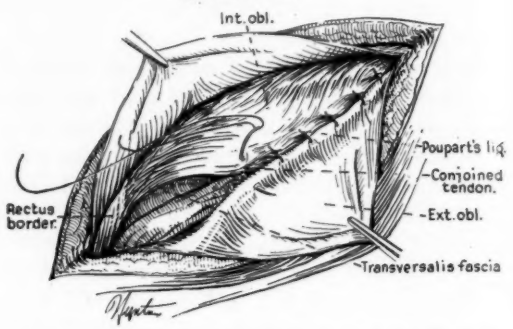

Fig. 4. Ferguson operation. This is very similar to the Halsted II operation. The edge of the surgical conjoined tendon and internal oblique is sutured to Poupart's ligament over the cord.

TABLE III. RECURRENCE RATE—HALSTED II, FERGUSON

	No.	Recurrence	Per Cent Recurrence	Follow-up
Indirect Inguinal Hernia				
Shelley (1940)	163	8	4.8	
Taylor (1920)	732	31	4.2	
Fallis (1936)	673	55	8.3	
Erdman, S. (1923)	112	3	2.6	
Glenn and McBride (1936)	253	6	2.3	
	1,933	103	Av.: 5.3	
Direct Hernia				
Shelley (1940)	19	1	5.3 *	
Taylor (1920)	68	12	17.6	
Erdman, S. (1923)	25	7	28.0	
	112	20	Av.: 17.8	

Ferguson Operation

Ferguson's operation is essentially the same as Halsted's except that he omits the suturing of the cremasteric fascia under the internal oblique and the imbrication of the external oblique (Fig. 4).

Bloodgood

Bloodgood made an incision along the lower border of the rectus muscle and brought the rectus, the internal oblique and transversus abdominis

muscles down to Poupart's ligament (Fig. 5). In 1903, Bloodgood and Halsted introduced a rectus flap repair for direct hernia. The recurrence rate with the first procedure is too high to warrant its use, as indicated in Table IV.

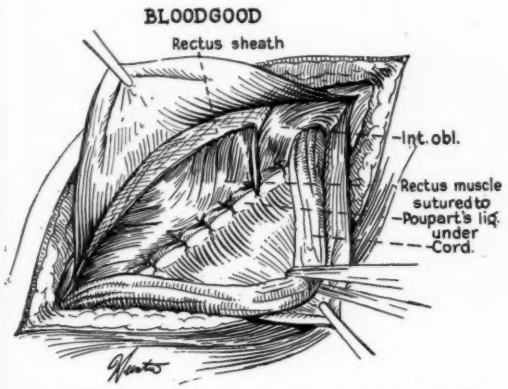

Fig. 5. Bloodgood operation. The rectus muscle and sheath are sutured to Poupart's ligament under the cord.

TABLE IV. RECURRENCE RATE—BLOODGOOD RECTUS MUSCLE

	No.	Recurrence	Per Cent Recurrence	Follow-up
Indirect Inguinal Hernia				
Shelley (1940)	40	7	17.5	
Taylor (1920	22	9	40.9	
	62	16	Av.: 26.0	
Direct Hernia				
Shelley (1940)	97	25	25.8	

The rectus fascia used in a similar manner produced infinitely better results (Table V).

TABLE V. RECURRENCE RATE—BLOODGOOD-HALSTED RECTUS FLAP

	No.	Recurrence	Per Cent Recurrence	Follow-up
Indirect Inguinal Hernia				
Taylor (1920)	13	0	0	
Estes (1941)	271	1	0.4	Up to 14 mos.
	284	1	Av.: 0.25	
Direct Hernia				
Estes (1941)	72	2	2.77	

Mattson-Bloodgood-McVay

Dr. Hamlin Mattson of Minneapolis, while in the service with the armed forces in 1943, devised a technique for hernia repair which he recommends when the transversalis fascia and conjoined tendon prove inadequate for repair. He swung a rectus and pyramidalis flap down to Cooper's ligament to fill in the floor of Hesselbach's triangle (Fig. 6). He repaired 24 difficult direct and recurrent hernias by this method. It may eventually prove that this procedure will combine the favorable end results of each of these.

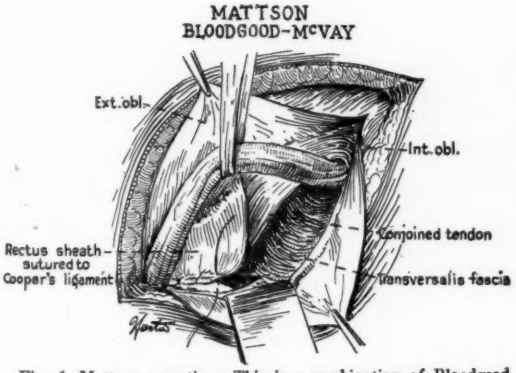

Fig. 6. Mattson operation. This is a combination of Bloodgood and McVay procedures in which the rectus fascia is sutured to Poupart's ligament under the cord. It essentially blocks an approach to the floor of the canal.

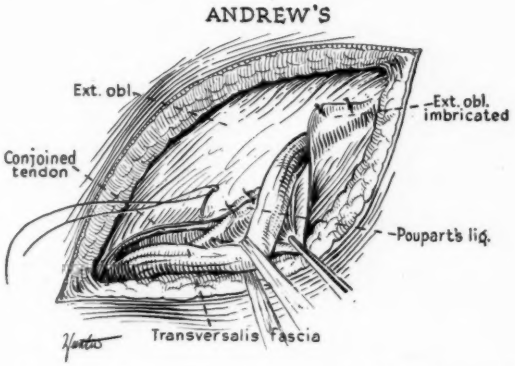

Fig. 7. Andrews operation. The external oblique fascia and conjoined tendon are sutured to Poupart's ligament under the cord. The cord is placed between the imbricated outer leaf of the fascia of the external oblique.

E. Wyllys Andrews

Andrews brought the upper flap of the external oblique aponeurosis and the internal oblique muscle together down to Poupart's ligament. He placed the cord upon these structures and swung the lower flap of the external oblique over the cord, leaving the cord between the imbricated flaps (Fig 7).

TABLE VI. RECURRENCE RATE—E. WYLLYS ANDREWS

	No.	Recurrence	Per Cent Recurrence	Follow-up
Primary Inguinal Hernia				
Shelley (1940)	50	4	8.0	
Joyce (1940)	544	16	2.9	0 to 4 yrs.
	594	20	Av.: 3.3	

Joyce reported very good results with the Andrews imbrication using the McArthur fascial strip as suture material.

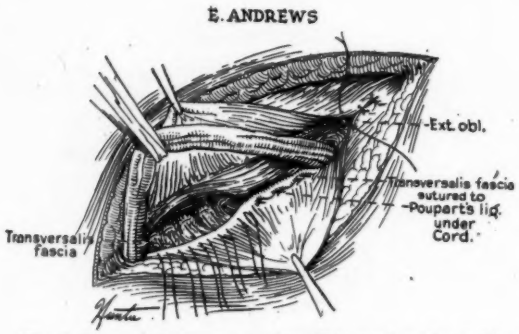

Fig. 8. Edmund Andrews operation. This consists of a tucking of the transversalis fascia and suturing it to Poupart's ligament under the cord.

Edmund Andrews

In 1924, Edmund Andrews stressed the utilization of only "white fascia" in the repair of hernia. He separated the transversalis fascia from the internal oblique muscle and sutured a pleat of fascia alone to the shelving portion of Poupart's ligament (Fig. 8). He also imbricated the external oblique. Only one reliable follow-up study with this type of repair has been found in the literature (Table VII).

TABLE VII. RECURRENCE RATE—EDMUND ANDREWS

	No.	Recurrence	Per Cent Recurrence	Follow-up
Primary Inguinal Hernia				
Burton & Ramos (1940)	457	34	7.5	3 yrs.
Recurrent Inguinal Hernia				
Burton & Ramos (1940)	64	9	14.0	

Wangensteen

Wangensteen has used a pedicle flap of the iliotibial tract by swinging the latter over the inguinal ligament and filling the defect with fascia lata. Burton has modified the technique by bringing the flap through the femoral canal. This procedure is usually reserved for the more difficult hernias in which there is a large defect to be repaired.

TABLE VIII. RECURRENCE RATE—WANGENSTEEN

	No.	Recurrence	Per Cent Recurrence	Follow-up
Burton & Ramos (1940)	8	1	12.6	
Wangensteen (1934)	14	1	7.3	
Garner (1947)	6	0	0	1 yr.-10 yrs.
	28	2	Av.: 7.3	

McVay

McVay has popularized the use of Cooper's ligament as the anchoring point instead of Pou-

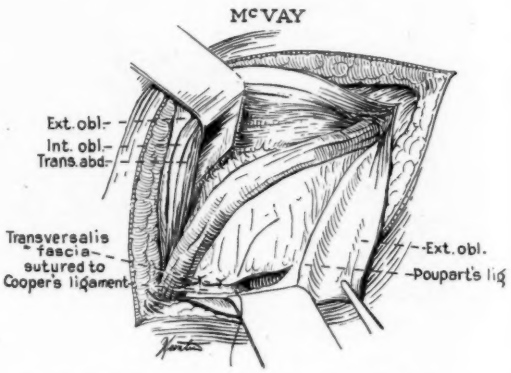

Fig. 9. McVay operation. The transversalis fascia is sutured to Cooper's ligament, thus blocking an approach to the floor of the canal.

part's ligament in the repair of inguinal hernia (Fig. 9). Cooper's ligament had been used by Lotheissen in 1898, Babcock in 1927, Dickson in 1936, and others, but chiefly for femoral hernia repair alone. McVay uses a Rienhoff relaxing incision routinely in his repair. The available reports dealing with the end results from McVay's operation are very favorable (Table IX). Since the conventional procedures up to date have been only reasonably satisfactory, his technique deserves further trial and evaluation in the hope that greater assurance can be promised in the repair of hernia.

TABLE IX. RECURRENCE RATE—MC VAY

	No.	Recurrence	Per Cent Recurrence	Follow-up
Primary Inguinal Hernia				
Harkins & Swenson 1943	112	1	0.9	⅔ less than 2 yrs. ⅓ over 2 yrs.
Garner (1947)	103	2	2.0	
Clark & Hashimoto (1947)	162	0	0.0	Up to 3 yrs.
	504	4	Ave.: 0.8	

McArthur and Gallie Fascial Strips

McArthur introduced the use of attached fascial strips from the external oblique aponeurosis as far back as 1901. However, the technique has not been widely used until the last ten to fifteen years. In 1921, Gallie found, after a thorough investigation with laboratory animals, that fascial grafts would remain viable if sutured

without tension. On the basis of that work, he used strips of fascia lata to repair inguinal hernia. One would assume that the McArthur fascial strip is more suitable than the Gallie strip, because the former is more readily available, and possibly more viable, since it is left attached. After comparing the recurrence rates of the two methods, we found the Gallie to be more satisfactory than the McArthur (Tables X and XI). However, it is a small series and no final conclusions can be made.

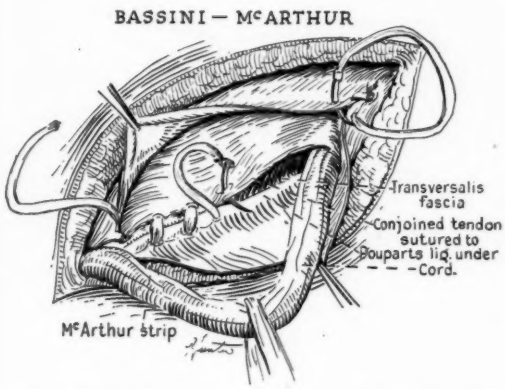

Fig. 10. Bassini-McArthur operation. McArthur recommended the use of locally available fascial strips and suggested that these could be used with any of the types of procedures. This illustration shows a Bassini type of closure in which the conjoined tendon is sutured to Poupart's ligament under the cord. The remaining strips merely close the fascia of the external oblique over the cord.

TABLE X. RECURRENCE RATE—GALLIE

	No.	Recurrence	Per Cent Recurrence	Follow-up
	Primary Inguinal Hernia			
Garner (1947)	388	7	1.8	
Shelley (1940)	7	1	14.4	
	395	8	Av.: 2.2	
	Recurrent Inguinal Hernia			
Garner (1947)	94	7	7.4	
Shelley (1940)	51	5	10.0	
	145	12	Av.: 8.3	

TABLE XI. RECURRENCE RATE—MC ARTHUR

	No.	Recurrence	Per Cent Recurrence	Follow-up
	Primary Inguinal Hernia			
Garner (1947)	139	12	9.0	
Shelley (1940)	421	34	8.1	
	560	46	Av.: 8.2	
	Recurrent Inguinal Hernia			
Garner (1947)	2	1	50.0	
Shelley (1940)	27	3	11.0	
	29	4	Av.: 10.0	

McArthur-Bassini-McVay

At St. Barnabas Hospital, we have been using a three-strip Bassini-McArthur (Fig. 10) or McArthur-Bassini-McVay procedure. The three strips are made from the upper flap of the external oblique; two are left attached at the pubic spine and one at the muscle end of the external oblique. The first strip is used to bring the internal oblique muscle snugly around the cord at the internal ring and to the inguinal ligament (Fig. 10). The remaining two strips close thereby re-establishing the inguinal canal. The end of the fascial strips are secured with fine wire. The advantage of this technique is that it eliminates all foreign suture material except a very small amount of wire, which produces little tissue reaction. Recently, we have modified this operation by suturing the transversalis fascia alone to Cooper's ligament without including the internal oblique and transversus abdominis muscle in this portion of the stitch (Fig. 11). We think that this operation provides double protection against protrusion of a hernia through the floor of the canal: first, by blocking the approach to the floor of the canal as the transversalis fascia is sutured to Cooper's ligament, and second, by reinforcing the floor of the canal as the edge of the conjoined tendon (internal oblique and transversus muscles) is approximated to Poupart's ligament.

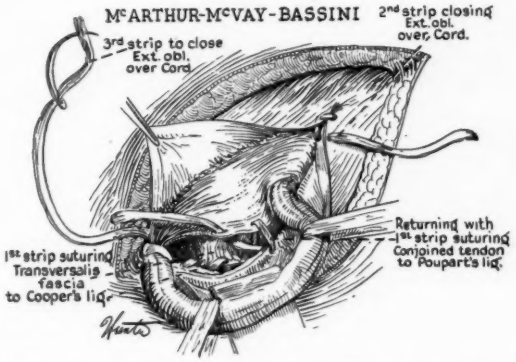

Fig. 11. McArthur-McVay-Bassini operation. Following the first strip, it will be observed that the transversalis fascia is sutured to Cooper's ligament, thus blocking the approach to the floor of the canal. The first strip continues back, approximating the conjoined tendon to Poupart's ligament, thus reinforcing the floor of the canal. The second and third strips are used merely to close the fascia of the external oblique over the cord, re-establishing the normal anatomical relationship of cord and inguinal canal.

An attempt was made to follow the hernia cases

in which this repair was used. One hundred and thirty-seven letters were sent out and there were 86 replies. We were able to examine only a small number of the patients. Several of the patients who stated they had a recurrence were mistaken, and one can safely assume that there were recurrences among the group who reported a good result. We therefore did not determine any recurrence rate, feeling that a follow-up by letter would not be sufficiently accurate.

TABLE XII.

	SILK			CHROMIC CATGUT		
	No.	Recurrence	Per Cent Recurrence	No.	Recurrence	Per Cent Recurrence
Parsons (1937)	458	37	8.0	244	49	20.0
Garner (1947)	1,370	97	7.0	274	28	10.0
Longacre (1939)	496	17	3.4	270	34	12.5
Hawks-French (1943)	143	8	5.6	349	42	12.0
	2,467	159	Av.: 6.4	1,137	153	Av.: 13.5

TABLE XIII. POUPART'S LIGAMENT

	SILK				FASCIA		
	No.	Recurrence	Per Cent Recurrence		No.	Recurrence	Per Cent Recurrence
Indirect Hernia							
Garner (1947)	327	23	7.0				
Longacre (1939)	278	5	2.1	Shelley (1940)	274	19	6.9
				Joyce (1940)	544	16	2.9
Hawks-French (1943)	110	4	3.6	Garner (1947)	91	4	4.4
	715	32	Av: 4.5		909	39	Av.: 3.3
Direct and Bilocular Hernia							
Garner (1947)	970	63	6.5				
				Garner (1947)	436	15	3.4
Hawks-French (1943)	25	2	8.0	Shelley (1940	154	16	10.4
	995	65	Av.: 6.5		590	31	Av. 5.2
Recurrent Hernia							
Garner (1947)	77	9	13.0	Garner (1947)	96	8	8.3

TABLE XIV. COOPER'S LIGAMENT

	SILK				FASCIA		
	No.	Recurrence	Per Cent Recurrence		No.	Recurrence	Per Cent Recurrence
Primary Hernia							
Garner (1947)	35	0	0	Garner (1947)	26	0	0
Harkins-Swenson (1943)	112	1	0.9				
	147	1	Av. 0.7		26	0	0
Recurrent Hernia							
Garner (1947)	13	1	7.7	Garner (1947)	15	1	6.6

Comparison of Chromic Catgut and Silk

Most surgeons agree that silk, cotton, and linen are more suitable than chromic catgut in hernia repair. There are skeptics, however, who argue that the suture material used does not effect the recurrence rates. Table XII should remove any doubt as to the value of nonabsorbable over the absorbable suture.

Comparison of Silk and Fascia

Some authors compare fascia to nonfascia, but the latter includes both chromic catgut and silk which should not be included together, as shown above. A more significant comparison would be between nonabsorbable suture and fascia, particularly to decide if fascia should replace nonabsorbable suture material in the simple hernia. The results in Tables XIII and XIV show almost identical recurrence rates.

Type of Recurrence

A large majority of recurrent indirect and direct hernias operated upon are found to be direct, a small number indirect, and very few femoral. One might argue that since so few hernias recur as femoral hernias, it should not be necessary to use a McVay procedure. However, on the basis of the figures in Table XIII and

XIV, it appears that the use of Cooper's ligament gives a smaller recurrence rate than was obtained by using the inguinal ligament.

When hernia recurs, most of them return as direct hernias as indicated in the following tabulations:

Burton and Ramos (1940)

130 Recurrences

Direct	71
Indirect	10
Bilocular	27
Trilocular	1
Femoral	0
Others	21

Shelley (1940)

	Recurrence	
	Indirect	Direct
95 Indirect Hernias	10	85
115 Direct Hernias	8	107

Recurrence Rates Among Operators

Interns and residents have higher recurrence rates than the staff. Proceeding from the more experienced to the less experienced, they vary from none to 24.1 per cent (Taylor) and 0.8, 3.9 and 6.7 per cent (Joyce). Therefore, only the cases of the experienced surgeons should be used in a report if a new technique is to be evaluated accurately.

Method of Follow-up

Taylor showed the importance of following cases by personal examination rather than by letter from the patient or another physician (Table XVI).

TABLE XVI.

	INDIRECT			DIRECT		
	No.	Recurrence	Per Cent Recurrence	No.	Recurrence	Per Cent Recurrence
Patients examined at Johns Hopkins	356	30	8.4	47	14	29.7
Patients checked by letter	460	16	3.4	47	3	6.3
	816	46	Av. 5.6	94	17	Av.: 18.08

Hernia in the Young and Aged

Coley repaired 4,807 hernias in children, with only nineteen recurrences, or a 0.39 per cent recurrence rate. Frequently, the only repair necessary is simple high ligation of the sac or a Ferguson operation. Grace, Dubin, and Murray on the other hand report over a 20 per cent recurrence rate for the aged. Shelley showed that the recurrence rates of indirect hernia increase with age as follows:

0-20 yrs.	1.3%
20-40 yrs.	6.9%
40-60 yrs.	9.2%
60-80 yrs.	20.0%

The transversalis fascia is often thinned and weakened in elderly patients.

Time of Recurrence

The time of recurrence varies in the literature. Probably a majority of recurrences are within the first two years, but if an operator's recurrence ratio is to be accurate, his course should be followed at least three years, preferably five (Table XV).

TABLE XV.

	Less 6 mo.	Less 1 yr.	Less 2 yrs.	Over 2 yrs.	Over 3 yrs.
Burdich (1937)			60.0%	40.0%	
Judd (1908)	70.0%	90.0%			
Erdman (1923)		73.9%	98.6%		
Longacre (1939)		72.0%	87.2%		
Shelley (1940)			66.6%		25.0%

The studies made at St. Barnabas Hospital reveal that letters from the patient were not reliable. Many studies gleaned from the medical literature were not included in this paper because the cases were followed by letter or over too short a period of time. Those followed by letter have very low recurrence rates: some less than 1 per cent in large series.

Conclusion

1. The Bassini and the Halsted II operations have about the same recurrence rates, 5 to 6 per cent in indirect, and 15 to 18 per cent in direct hernias. These operations reinforce the floor of the inguinal canal.

2. The Halsted I and Bloodgood (rectus muscle) operations have such a high recurrence rate as to make these operations undesirable. The rectus fascia flap repair, however, gives good results.

3. Wangensteen's pedicle flap is an excellent repair for more difficult hernias.

4. Cooper's ligament repair gives lower recurrence rates in primary inguinal hernia than other procedures. This operation blocks an approach to the floor of the inguinal canal.

5. Silk, linen or cotton are definitely better suture materials than chromic catgut in hernia repair.

6. Silk and fascia, when used as suture ma-

terial, give about the same recurrence rates in primary inguinal hernia repair.

7. Most hernias recur as direct hernias through the floor of the inguinal canal.

8. A barrier against an approach to the floor of the canal (McVay), in addition to a reinforcement of the floor of the canal (Bassini), held permanently with suture material (McArthur fascial strip) appears to offer, on the basis of statistical analysis, advantages from each of these fundamental principles which have been evolved for the cure of hernia (Fig. 11).

9. Recurrence rates increase with age.

10. If recurrence rates are to be accurate, cases should be followed at least three years, preferably five.

11. Follow-up by letter is inaccurate.

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LABORATORY FINDS RARE DISEASE

Two cases of sporotrichosis, a fungous disease very rare in Minnesota, were reported recently by the Medical Laboratories of the Minnesota Department of Health. Only one case had previously been reported to the Health Department as far back as 1932.

The disease is a chronic infection characterized by the development in the lymph nodes, skin, or subcutaneous tissues of nodular lesions which break down to form indolent ulcers. Evidence suggests that the infection is acquired from contact with plants, but it may also come from contact with infected animals. The fungus usually finds entry through the skin. The first lesion may appear from 20 days to three months after inoculation. The first evidence of the infection is the appearance of a hard, spherical, non-tender nodule. As the disease progresses, subcutaneous nodules appear along the lymphatics draining the area.

One of the recent cases in Minnesota, occurring in a St. Louis County man, apparently came from pricking his finger on a thorn while planting rose bushes last fall. This case was identified by the laboratory of St. Luke's Hospital, Duluth, and the identification corroborated by the Health Department. The other case, that of a woman in Brown County, started with an ulcer just above the elbow, and had no history of previous injury.

Fortunately, treatment with potassium iodide is practically a specific in the treatment of sporotrichosis, if given in adequate, rapidly increasing doses—*Minnesota's Health*, April, 1948.

HEMOSTASIS IN TONSILLECTOMY

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THIS article is written not in the belief that I am offering anything new in the technical field, but rather with the idea in mind that medical literature dwells neither long enough nor exactly enough on the important detail of hemostasis in tonsillectomy, thereby failing to impart much needed information to the general practitioner. The article is written also, therefore, in the hope that it will curtail the years of experience in general practice necessary to obtain the knowledge which a single article could have properly presented.

My desire is not to discuss the technique of tonsillectomies, except to note a few facts pertinent to the later development of my ideas on the treatment of postoperative hemorrhage. I believe that in shaving or snipping the tonsil capsule from its bed, care should be exercised to hug the tonsil, and also that a greater tension should be put on the tonsil with only a reasonable and much less pressure on the dissecting knife. Furthermore, the closer the lower pole is approached before snaring, the less hemorrhage may be expected, if the dissection is deftly performed. In most cases, it should be possible to shave out the tonsil completely, snaring merely mucous membrane.

Whatever technique is used, I feel that descriptive emphasis is wrongly placed on the procedure of enucleation, rather than on hemostasis. This latter, if we are to judge by the bulk of literature, is treated too lightly and as a secondary matter. Instead of meticulous ligation of bleeders, dependency is placed on pressure, use of icebags, pillar suturing, application of silver nitrate, Monsell's solution, thrombin, serum, novocaine and adrenalin injection at the point of bleeding, et cetera. All of these seemingly ignore the fact that in any other surgical procedure, in attempting to affect hemostasis, recourse is had only to ligation with no thought of employing doubtfully effective methods such as those above mentioned.

Field

The exposed surface following tonsillectomy presents itself as an anterior and posterior wall, meeting at a central perpendicular line. This is true only insofar as the area is left unmolested. Active tension on either the anterior or, especially, the posterior pillar, produces a flat surface, the trough being reduced.

The inferior "angle," from which has been removed the lower pole of the tonsil, appears as a well-like cavity. In this case, too, traction upward on either or both pillars near their inferior extremities elevates and obliterates the cavity. This may be accomplished, also, by grasping the bed (without clamping) in the vicinity of the lower pole raw area and exerting traction.

The area which previous to enucleation contained the superior pole of the tonsil is an actual cavity. It is usually more difficult to produce a clearly visible area at that point. However, here too, full vision of the entire surface may be obtained by traction distalward with concomitant upward traction by a pillar retractor on the hood of the cavity.

Thus, with good light, there should be reasonable assurance of full visualization of every recess of the exposed tonsillar bed.

Vessels

Either venous or arterial bleeding or both may issue from the upper pole area.

In the central area, unless the operation has been quite roughly done, the bleeding usually is only from a punctured or torn central vein, coursing vertically. Rarely is there a plexus of veins. In all cases the blood may be seen issuing from the particular point of injury to the vein.

As the lower pole is approached, on the inferior central surface, and usually on the "anterior" wall, there is present quite commonly an arterial hemorrhage, occasionally productive of a freely spurting issue.

The lower pole area may be the site of either arterial or venous bleeding or both. It is especially noticeable here, however, that bleeding is seldom brisk and soon ceases spontaneously. It is quite important to bear this in mind, as rapid filling of this area will frequently prove, when it is reduced by tension, to be the result of gravitation of blood from a superior area—this regardless of a low head positon.

There is no bleeder, in my experience, which cannot be fully visualized, if care is used.

In a tonsillectomy done under general anesthesia, if a bleeder is found in a particular location

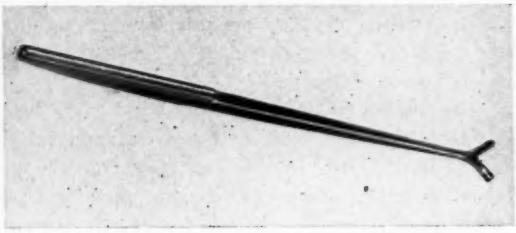

Fig. 1. The La Force "Y" tier with rounded notch.

in one tonsil bed, a bleeder can be expected to be present in the corresponding location in the opposite tonsil bed. This anticipation is a valuable time-saver in seeking for bleeding points.

The "fire hose" type of bleeder is hardly as frightful or profuse a condition as the name seems to imply. Rather, it is a bleeder whose actions resemble those of an uncontrolled fire hose—a waving, curling action. The result is that, following sponging and ascertaining the position of the bleeder, a forceps applied at that point fails to cause hemostasis; or before clamping is attempted, it is realized the bleeder is no longer at that point. If the mechanics of the difficulty is not realized by the surgeon, he will eventually begin to clamp indiscriminately, grasping large areas of tissue and doing real harm. Good light and care will result in visualization of the vessel, which may be clamped above the elusive bleeding point. Pinhole or tear hemorrhages of veins are clamped at the bleeding point, with no more than the vein being caught in the grasp.

I have never encountered a general oozing. I feel that those in a state of hemorrhagic diathesis should be left unoperated upon. I believe that most of the "bleeding" cases are excuses for unskillful surgery or lack of meticulous care in ligation, the operator depending, rather, on ineffective, ill-chosen or antiquated methods because he considers the location and ligation of bleeding points an extraordinary procedure.

Instruments

For many years I have used satisfactorily a Wolf mouth gag with a self-retained tongue depressor. This mouth gag or any other of comparable design produces a field easily illuminated and completely envisioned.

Rochester-Pean's curved forceps are advisable, smaller forceps being impractical and difficult to manipulate.

The La Force "Y" tier, as illustrated in Figure 1, has been used by me for many years with complete satisfaction. It can be purchased from any of the surgical houses. It is important to note that the guide slots converge to a sharp angle. This angle should be rounded with a rat-tail metal file, so that during tension the instrument will exert no grip on the suture material, but rather will afford a smooth surface. Silk or cotton sutures are difficult to use; 00 catgut works well. In my experience, any type of trick tying forceps is cumbersome and impractical.

Following the original sponge pressure, small sponges, one-fourth the usual size, are used in seeking bleeders.

Technique

On several occasions I have practiced grasping bleeders as they became evident during enucleation. However, during the dissection there is free hemorrhage from the tonsil just as from the bed, resulting, in my experience, in difficulty in identifying bleeding points, thereby prolonging the operation. Furthermore, it is obvious that at this stage of the procedure, no effort can be made to tie without encountering many difficulties. The result of this technique, therefore, is that upon completion of enucleation of the tonsil, there will be many unnecessary hemostats in the field, most of them, incidentally, grasping excessive tissue.

It is most important that a grasp inclusive of any excess tissue be avoided. Not only is this destructive to muscle tissue, but also could be a direct cause of delayed hemorrhage due to slough.

Grasping excess tissue results in difficulty or failure to ligate securely. Furthermore, it is absolutely unnecessary, no matter how profuse the bleeding from a particular point. The intention of the operator should be to grasp and ligate only the involved vessel.

As the large sponge is slowly removed from the upper pole area, each bleeding point is clamped. This is at times awkward. Therefore, if proper suction facilities are to be had, the large sponge may be removed, and the operator

may resort to seeking with the smaller sponges and suction tip.

The pillar retractor is probably more valuable in depressing the posterior than in elevating the anterior pillar. If this is difficult, an intestinal Allys forceps may be used in drawing down the posterior pillar. Seemingly inaccessible areas are easily brought into view by grasping with the Pean forceps an adjacent area and drawing the bleeding field into view. If this is forgotten, what should be an easily remedied situation results in a seemingly hopeless problem.

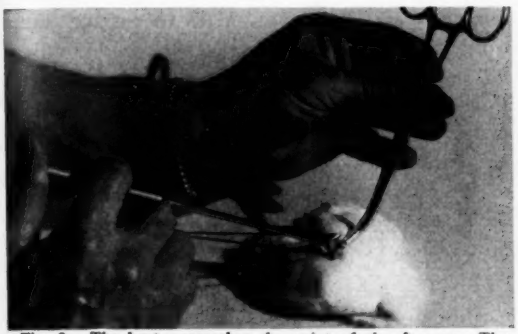

Fig. 2. The knot approaches the point of the forceps. The forceps is rotated to face the approaching knot. The method of forcing the knot with one hand is unworkable.

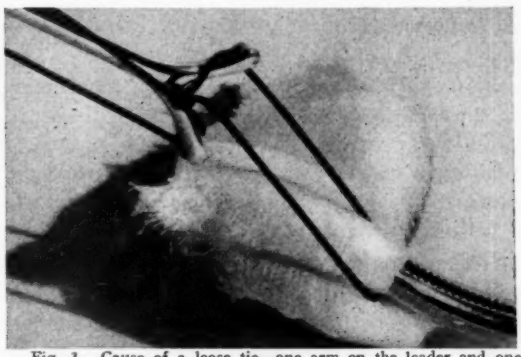

Fig. 3. Cause of a loose tie—one arm on the leader and one in the loop.

If several hemorrhaging points are present, sponge pressure may be used to control them while each is tied. However, this is an extreme condition. I have never found it necessary to ligate more than five bleeders on a side. Usually they number two, rarely three. In all cases, the "terrific" bleeding from a tonsil bed, on careful inspection, manifests its origin as a single bleeding point.

Never have I found any suturing necessary. That should be properly relegated to the realm of bygone surgery. Except in inexcusable operations or in cases of hemorrhagic diathesis, the suturing of pillar over gauze is little less than an expression of ignorance of the principles of hemostasis. (I am referring to any hemorrhage within the eighteen-hour postoperative period.)

Ligating is comparatively simple but is subject to little difficulties which, if unsuspected, result in insecure ties. The difficulties, as illustrated, are:

1. Failure to slip the loop over the tip of the forceps. This is overcome by having the tip facing the approaching knot (Fig. 2).

2. One arm of the tier may be on the leader while the other is within the loop, resulting, surely, in a loose tie (Fig. 3).

3. Complete rotation of the forceps may be necessary to bring the tip in view out from under the hood or anterior pillar.

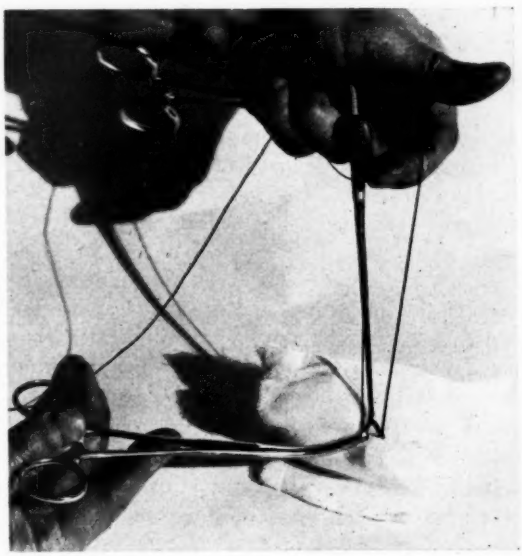

Fig. 4. One-hand tying after the knot is formed.

4. It is customary for an assistant to hold the hemostat during the placing of the ligature. However, at times there is such difficulty in manipulation that the surgeon himself must guide the point of the forceps with his right hand. In such cases the leaders of the ligature above the descending knot are clamped. Then, with the left hand grasping this clamp, and the finger

placed between the strands, the palm of that same hand presses down on the tier, simply completing the one-hand tie (Fig. 4).

Bleeders on the pillars must be handled quite delicately or muscle destruction will result. Need of hemostasis in these areas is rare in my experience.

After all ties are placed, a gentle roughening of the surface with a sponge is practiced in order to insure discovery of bleeders likely to open several hours later. This procedure brings to light potential postoperative hemorrhage often enough, I believe, to justify itself.

The use of the "Y" tier is easily adapted to local anesthesia tonsillectomies and may be applied during the first eighteen hours of the postoperative period.

Results

During the period covered by this study 200 tonsillectomies were performed under general anesthesia and 150 under local anesthesia.

In the group of 150 local anesthesia tonsillectomies there were two postoperative hemorrhages. One was due to a tie that had slipped in a patient, A. J. Fourteen hours postoperatively, the point was easily religated at the bedside, employing the usual technique. The second case was in a patient, G. P. No ties had been found necessary during the operation, the patient leaving the operating room with a dry field. Moderate bleeding appeared twelve hours later which required ligation at the bedside.

The occurrence of a single frank hemorrhage in this local anesthesia group shows the importance of the proper application of a tie. The other hemorrhage suggests the importance of extreme care in ligating small bleeders after tonsillectomy under local anesthesia, inasmuch as following disappearance of the edema of infiltration and loss of the adrenalin effect seemingly insignificant hemorrhages might become profuse.

In the group operated upon under general anesthesia, one hemorrhage in a patient, D. M., a child of six years, became apparent forty-eight hours following operation, but was moderate and ceased spontaneously. There were two other hemorrhages in this group, each occurring in a brother and sister operated on the same morning, but not occurring until eight days postoperatively. Each was controlled by pressure applied for eight hours, and was located in the lower pole where no ligatures had been applied. From observation of these two cases and of cases of delayed hemorrhage occurring in patients in charge of other physicians, I am inclined to the belief that delayed postoperative hemorrhage is not due to slough of tissue, but rather to a length of vessel detached from the bed, which not having been ligated sheds its clot and reopens at a later date.

It is to be noted that the formation of a postoperative clot denotes hemorrhage. Except for the three cases in which bleeding might have ceased spontaneously, there were no clots formed in the tonsillar beds. Postoperatively the presence of large clots adds to the pain.

Conclusions

1. Exposure of the raw tonsil bed following tonsillectomy is easily accomplished and necessary for proper hemostasis.

2. As in other surgery, meticulous ligation of bleeding vessels, without inclusion of excess tissue, results in absolute control of postoperative hemorrhage.

3. In 350 cases of tonsillectomy there were three immediate hemorrhages of little consequence and two hemorrhages occurring eight days postoperatively, all other cases presenting fresh beds free of clots.

4. A method has been presented of executing these procedures, the results of which seem to prove its worth.

MEDICINE IN THE CHANGING ORDER

The unsolved problems of public health and preventive medicine lie in the field of health protection and health promotion of the adult, particularly the young adult, who is the most productive member of society. It is also quite clear that problems of adult hygiene cannot be solved by the methods of mass approach.—Report, New York Academy Med. Comm., The Commonwealth Fund, 1947.

CERTAIN FACTORS INFLUENCING SURVIVAL AND DEATH IN CORONARY ARTERY DISEASE

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WITHIN the last decade and a half, a change occurred in the medical concept regarding the prognosis in coronary artery disease. The previously existent pessimism has been supplanted by a greater tone of optimism. This has been brought about by several attainments. More accurate and comprehensive studies of large groups of patients over long periods have yielded statistical information which has favorably modified the data elicited from previous limited investigations conducted over short periods. These short-term studies failed to reveal the true over-all picture, because the mortality rate of coronary artery disease is at its peak during the first year following the onset of symptoms. While the death rate successively continues, it does so in a gradual and less impressive manner. Thus, a study of a limited number of patients over a period of five years will obviously present a much higher relative mortality rate than a study of a large group of patients over a period of twenty-five years or more. Furthermore, greater diagnostic accuracy, the earlier positive recognition of the disease, and its more prompt and effective management have all been factors in the more favorable prognosis. It therefore seems appropriate to undertake an appraisal of the known factors which influence both survival and death in this remarkably common form of heart disease.

Coronary artery disease adapts itself to classification in two main categories: (1) transient recurrent episodes of coronary insufficiency, named angina pectoris by Heberden in 1772, and (2) sudden occlusion of one or more coronary arterial tributaries by thrombosis with or without acute infarction of the myocardium. The patients in either category may have the complicating effects of significant hypertension or associated cardiac defects.

Remarks on the Genesis of Coronary Artery Disease

While the exact genesis of arteriosclerosis and atherosclerosis is not known, certain pertinent speculations from observation and experience are justified. It has long been known that arteries or arterial junctions which normally are subjected to unusual stress and strain are favorite sites for the development of these changes. This is particularly true of the coronary arteries, and especially of the coronary tributaries which supply the left ventricle. Owing to the massive musculature of the left ventricle, the branches are deeply penetrating and they issue from the main artery at right angles, an arrangement which rhythmically, with the beat of the heart, permits buckling of the vessel to occur and renders these junctions susceptible to great and recurrent strain. Opposed to this status are the coronary tributaries which supply the right ventricle. The musculature of this chamber is less massive, the vessels are smaller and more superficial, do not penetrate the muscle mass at right angles, and are therefore not subjected to the same degree of strain as are those of the left ventricle. These observations are in harmony with postmortem findings.

From almost the beginning of medicine, atherosclerosis and arteriosclerosis have been accepted as concomitants of the process of aging. In so far as the venerable years of life are concerned, this may be true, but in the younger age groups another answer must be sought. Various investigations during recent years have shown that many patients with coronary artery disease, and with arteriosclerosis obliterans of the extremities, have associated hyperlipemia with or without lipoid deposits in the skin (xanthelasma). In this connection, the studies of Leary have been both interesting and important. He suggested that atherosclerosis represents a disturbance of the lipoid metabolism of the body and that thus, instead of being a normal aging process, it belongs to the category of metabolic diseases wherein animal fats are not properly utilized and excessive quantities of the lipoids are present in the blood and tissues of individuals, in a similar manner to the failure of carbohydrate metabolism in diabetes mellitus and failure of purine metabolism in gout.

Leary and others recognize three basic arterial lesions. The first is atheroma, which is a rever-

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sible process in youth, in which cholesterol esters appear in foam cells in the subendothelial layer of the intima, as in atherosclerosis. Excess cholesterol is removed by cells which have the general character of fibroblasts. In these cells, the esters are split, the excess cholesterol becomes dissolved and disappears, and excessive cholesterol does not remain sufficiently long to be an irritant and thus bring about true atherosclerosis. As the body ages, the power to remove excess cholesterol from the arteries apparently becomes lost. The second type of lesion is atherosclerosis, which is a progressive process in which the foam cells persist for long periods, and the excess cholesterol is retained, acts as an irritant and stimulates the growth of connective tissue. The third type is arteriosclerosis, which is the ultimate calcification of the already existing arterial lesions.

Cholesterol is a lipoid found in nature only in animal bodies and their products. It is a basic substance of every animal cell, and the human supply is derived solely by ingestion. It is not synthesized in carnivorous animals or man. It is probable that herbivora synthesize cholesterol from the closely related phytosterols, which have the same chemical formula as cholesterol but with a different molecular arrangement. Cholesterol occurs in both a visible (polariscopic) form and a combined nonvisible form. It has been shown that visible cholesterol normally occurs in the adrenal cortex, myelin sheaths, interstitial cells of the testicle and, at times, in corpora lutea. Otherwise, visible cholesterol appears always to be associated with disease. It is a chronic irritant and, like other foreign substances, tends to stimulate the growth of connective tissue.

Man is the only known creature who, from soon after birth to old age, partakes of a relatively high animal fat diet. Furthermore, man is the only known creature that dies relatively young from coronary disease and, as he attains advanced periods of life, universally exhibits arteriosclerosis. Also atherosclerosis has repeatedly been produced experimentally in herbivora by the feeding of rich cholesterol diets.

Difficulty has been encountered in explaining the sex discrepancy in coronary artery disease. There is a ratio of nearly 5:1, the disease being remarkably more common among men than among women, and when coronary artery disease does develop among women, it is usually later in life than among men. This fact cannot be explained on an anatomic or general physiologic basis, nor on the basis of occupational differences or other environmental factors. There is, in reality, only one fundamental functional difference between men and women, and that is woman's specific function of reproduction.[8]

It is a well-known fact that during pregnancy the lipoids of the tissues of the body increase markedly. This is without a doubt a physiologic response to assure adequate nutrition for the development of the fetus. However, when pregnancy has been resolved and the normal adjustments have been made, women in most instances are capable of mobilizing and utilizing this excess lipoid material and again assuming a condition of complete normality. Women are apparently possessed of a more perfect and active lipoid metabolism than men. When men once begin to accumulate lipoids in their tissues, the lipoids tend to remain there and frequently are deposited in the arterial intima.

In discussing the genesis of coronary artery disease, the influence of heredity cannot be avoided. It is a daily experience when one questions patients suffering from cardiovascular-renal disease that the development of various phases of this disease in successive generations of the family is not uncommon. There seems little doubt that a heredity of this type results in certain persons being born with relatively poor cardiovascular fabrics. Some of them, under more or less cloistered and protected conditions of life, may get along very well, but many others do not. The latter are at least candidates for coronary artery disease, hypertension or both.

In addition, the stresses and strains of modern life, which promote recurrent and finally sustained tension and often prevent adequate rest and relaxation, are undoubtedly important influences which favor the development of vasospasm in certain individuals. It is furthermore known that a complicating hypertension is capable of accelerating the progression of both the atherosclerotic and arteriosclerotic lesions.

Another factor which must be taken into account in this discussion is the question whether the use of tobacco accelerates the progression of coronary artery disease. There is an increasing tendency toward more widespread and excessive use of tobacco today. The general statement that the use of tobacco is injurious to all who practice the habit is, without a doubt, far from being

the truth. It, however, can be correctly stated that an appreciable group of individuals exist who do not tolerate tobacco well and among whom, under its continued and especially excessive use, episodes of vasospasm may occur.

In 1940, English, Berkson and I carried out a comprehensive statistical study regarding the use of tobacco in coronary artery disease. It is of interest to note that in the fifth decade of life, 79.7 per cent of the patients who had coronary artery disease were smokers and in the control series in which this disease was absent, 61.9 per cent were smokers. This is a discrepancy of approximately 18 per cent and is of significant statistical importance. Data of this nature obviously do not permit the conclusion that tobacco is a specific agent in the genesis of coronary artery disease, although the allegation cannot be denied that it may accelerate the arterial lesions in some persons, particularly when excessively used. It seems, therefore, that tobacco has its greatest injurious potentialities in the younger age groups. The effect of the degree of smoking was also investigated, and it became evident that the incidence of coronary artery disease increased with the degree of smoking.

Transient Recurrent Episodes of Coronary Insufficiency (Angina Pectoris)

It is desirable to analyze this group of patients first because they may be stated to represent the uncomplicated form of coronary artery disease. In many of them, sudden occlusion of a coronary arterial tributary has not occurred, although these individuals are perpetual candidates for this complication to happen at some time. It is a well-known fact that the coronary arteries of patients in this category are commonly obstructed or at least considerably narrowed by atherosclerosis or arteriosclerosis, but the obliterative process has occurred gradually rather than suddenly. The obliterative process commonly involves multiple tributaries.

This gradual narrowing and occluding process, usually extending over a period of several years, is the impetus for the development of collateral circulation, the basic mechanism whereby survival is possible. Most human hearts are provided with a variable abundance of small nonfunctional channels which become functional and intercommunicating when the demand is imposed. Collateral circulation may be well established and adequate by the time that complete closure of a coronary artery occurs but, more frequently, it is inadequate and incompletely established. This collateral circulation, bridging the gap of an occluded artery, is gradual in its development and may not reach its potential maximum for several years. In certain instances, its adequacy becomes so complete that with reasonable care the patient becomes free of symptoms. However, many other patients, by perpetually limiting excessive demands on the heart, may remain relatively free from symptoms even though the coronary circulation is limited.

The tendency exists for coronary atherosclerosis and arteriosclerosis to be a progressive process, although numerous instances occur in which the progression is gradual and at times favorably counteracted by the ultimate establishment of remarkably adequate collateral circulation. These are largely the patients who survive the disease beyond the critical first year period.

It is of great importance that the diagnosis of coronary artery disease be made promptly in order that a proper individualized regimen can be introduced immediately. I am convinced that the properly ordered regimen, when obeyed, is of paramount importance in the survival of many patients. Advice must center around modifications or prohibitions aimed at completely controlling the symptoms if possible. The advice naturally varies from patient to patient. Owing to the fact that the first year of the disease as evidenced by symptoms is so important, the immediate institution of the regimen should not be delayed. Temporary discontinuation of work in the form of a restful vacation at home should be insisted on whenever possible. It is almost the rule that the onset of symptoms coincides with bouts of unaccustomed activity, tension and fatigue. The patient must acquire a new philosophy of life, an accomplishment which rarely can be achieved in a short time. He must learn his physical tolerance, he must learn the art of relaxation, and, above all, learn to control his emotions more adequately. It is of great importance that the patient be instructed to modify his activities below his limit of accustomed tolerance during extremely hot weather, particularly when the humidity is high, during extremely cold weather and during periods when abrupt and great fluctuations of temperature occur. Each patient should be instructed regarding the use of nitrites and should always have the

drug on his person for immediate use if necessary. The obese patient should reduce his weight by careful dietary precautions, and the excessive smoker should either discontinue the use of tobacco or use it sparingly. Patients who have hyperlipemia should use animal fats very sparingly in their diets, but unfortunately this method is frequently not effective. The use of the xanthine derivatives, vitamin concentrates and countless other so-called modern agents has been quite ineffective and has certainly not modified the course of the disease. Mild sedation has a definite place in certain patients.

Sudden thrombotic occlusion of a coronary arterial tributary in this group of patients commonly eventuates in sudden or ultimate death. Here again, the time factor enters the problem significantly because, if enough time has elapsed from the onset of symptoms of coronary insufficiency to permit adequate collateral circulation to become established, a complication that otherwise would be fatal may prove to be only a temporarily disabling incident.

The problem of sudden death during transient episodes of coronary insufficiency, in the absence of thrombotic occlusion and acute myocardial infarction or without complete atheromatous or arteriosclerotic obliteration of a coronary arterial tributary, remains largely unanswered. It is, however, not improbable that sudden and somewhat prolonged periods of myocardial anoxia are capable of initiating marked and often fatal disturbances in the intrinsic mechanism of the heart, such as ventricular fibrillation, ventricular tachycardia, asystole and even profound and irreversible disturbances of conduction. The abrupt termination of life under such circumstances has not, except in rare instances, permitted physicians to suspect these events by means of auscultation or to prove their occurrence by graphic records.

Recurrent thrombotic occlusion of coronary arterial tributaries obviously reduces the chances of survival. Cardiac enlargement is also an unfavorable finding regardless of its cause. It may result from hypertension, from multiple healed or healing infarcts, or from associated unrelated cardiac lesions. One or more episodes of congestive failure or bouts of pulmonary edema are invariably of grave import and rarely coincide with even a limited expectation of life. The same is true of the so-called status anginosus, always an expression of extensive, severe and progressive involvement of the coronary arterial tree.

In the discussion relating to the unfavorable import of congestive heart failure, brief comment regarding the oft-neglected venous coronary circulation is appropriate. Katz and his associates studied the venous coronary circulation in 1938 and made important contributions. Their work indicated that an average of 92 per cent of the blood from the right circumflex artery drains into the right thebesian system, while the coronary sinus receives an average of only 1 per cent and the left thebesian system an average of 7 per cent of the blood. In the case of the left circumflex artery, the right thebesian system drains an average of 48 per cent of the blood, the coronary sinus an average of 38 per cent, and the left thebesian system, 14 per cent of the blood. The anterior descending branch of the left coronary artery drains an average of 51 per cent of its blood into the right thebesian system, an average of 42 per cent by way of the coronary sinus, and an average of 7 per cent into the left thebesian system. These studies show the importance of the right thebesian system as a drainage bed, even of the blood from the arteries of the left side of the heart. Thus, approximately two thirds of the total blood flowing through these three important coronary arteries drains into the right thebesian system and less than one third into the coronary sinus. It therefore becomes evident that interference with this important drainage bed, such as occurs in congestive heart failure when pressure within the right ventricle becomes significantly increased, immediately impairs the efficiency of the coronary arterial blood flow.

Finally, the absence of significant electrocardiographic alterations tends to indicate a more favorable prognosis than their presence indicates, although many exceptions to this statement have been observed. Approximately a third of patients with transient recurrent episodes of coronary insufficiency, who have escaped sudden thrombotic occlusion and in whom significant hypertension is absent, have essentially normal electrocardiograms. This finding, however, must never be interpreted as mitigating, in any sense of the word, the importance and potential seriousness of the disease. By the same token, abnormal electrocardiograms do not necessarily or always indicate a grave prognosis, although many physicians make such inferences on very flimsy and

speculative evidence. After all, the question of survival or death rests fundamentally on the functional adequacy of a structurally impaired coronary circulation.

Sudden Occlusion of One or More Coronary Arterial Tributaries by Thrombosis with or without Acute Infarction of the Myocardium

The abrupt occlusion of a coronary arterial tributary frequently occurs as the first manifestation of coronary artery disease. However, atherosclerotic or arteriosclerotic changes in one or more vessels have been present, but many times the coronary circulation has not been impaired to the degree where symptoms have occurred. Therefore, the event commonly occurs with dramatic suddenness, the pre-existing arterial lesion may comprise only a limited segment (the so-called plaque), and death may occur immediately or soon after the complete closure of the arterial tributary occurs. This is in part due to the fact that the preparatory mechanism instrumental in fostering the development of collateral circulation has been absent.

The most common basis for the abrupt closure of a coronary arterial tributary is thrombosis, usually occurring near or at the point of arterial narrowing and roughening. Less commonly, hemorrhagic lesions in the walls of the coronary arteries are the forerunners for abrupt vascular occlusion usually completed by regional thrombosis. In 1943, English and I reported our findings in 135 hearts secured at postmortem examination. Hemorrhagic lesions were discovered in the walls of the coronary arteries in 40 per cent of the specimens examined and were directly or indirectly related to abrupt closure of the vessel in 39 per cent of the hearts exhibiting such lesions. The lesions were characterized by hemorrhage, the presence of large lipoid-containing cells (foam cells), proliferative intimal changes and organization. Smaller and less active lesions were found adjacent to calcified plaques. The intimal changes which coexisted with the hemorrhage appeared to represent the primary factor in the process, while the hemorrhage was a secondary event.

Very rarely, coronary embolism from a more or less remote thrombotic focus is the basis for sudden coronary obstruction. This event most frequently occurs where the coronary arteries are relatively normal, most commonly from valvular vegetations or mural thrombi situated in the left chambers of the heart, and only rarely as a paradoxical embolism from some focus in the right chambers of the heart or in the venous system.

The myocardial response to abrupt coronary artery closure is usually acute infarction. However, under conditions of pre-existing symptoms of recurrent transient coronary insufficiency, particularly when they have existed for a considerable time and the patient has survived the critical period during which collateral circulation is being established, sudden thrombotic closure of a coronary tributary may not result in myocardial infarction. While this circumstance is relatively rare, its reality has been definitely established by careful postmortem study.

When the patient survives the immediate impact of sudden coronary occlusion, and certain complicating features, such as intraventricular mural thrombosis with embolic detachments, spontaneous rupture of the infarcted region, and profound disturbances of rhythm, do not occur, an excellent chance for survival is afforded. This statement is of course predicated on the supposition that prompt and adequate rest and treatment have been inaugurated.

The complete healing and cicatrization of an infarct cover approximately a period of three months although considerable repair usually is evident within a month. It is, therefore, of great importance that complete rest be enforced during the early phases of recovery. When the process of infarction is completed, which usually occurs within forty-eight to seventy-two hours, nature's first task is to remove the necrotic detritus, which is accomplished by phagocytosis. This process results in a variable degree of leukocytosis and acceleration of the sedimentation rate of the erythrocytes. Frequently, within twenty-four to forty-eight hours, an invasion of fibroblasts occurs, best seen at the margins of the infarct. This process represents the first stage of healing. A little later small blood vessels are observed accompanying the new fibroblastic growth. These new vessels obviously furnish a system of transportation and nutrition for the healing infarct. They are in no sense components of the functional collateral circulation, already discussed, but apparently serve only to promote healing of the infarcted region. In large infarcts, particularly where collateral circulation has not been established to a functional degree, and conditions of

potential healing are absent, interrupted or delayed, progressive necrosis of the infarcted region occurs with spontaneous rupture or aneurysmal dilatation of the affected portion of the left ventricle. The former complication usually terminates in sudden death, although a period of several hours from the time of perforation until dissolution has been observed. In the latter complication, death may occur suddenly or gradually. As previously stated, recurrent multiple infarcts obviously diminish the patient's chances for survival.

In the attempt to prevent the occurrence of mural intracardiac thrombosis in acute cardiac infarction and to prevent extension and recurrence of the intra-arterial thrombosis, the virtually routine employment of anticoagulants has been introduced. Usually the administration of heparin is recommended during the first twenty-four hours to achieve prompt action, with the simultaneous administration of dicumarol to effect sustained action after the discontinuance of administration of heparin. While the total experience gleaned by this method of treatment is still too limited to enable one to draw positive conclusions, the incidence, particularly of embolic phenomena, appears to have been significantly reduced. The use of anticoagulants in patients prior to acute coronary occlusion is as yet not to be advised because no comprehensive data exist to recommend it and, owing to the necessity of constant medical vigilance, it appears at this time to be impractical.

The location of the cardiac infarct, with the exception of quite extensive involvement of the interventricular septum, does not seem to influence survival or death materially. The size of the infarct does clearly affect the outcome.

In most human hearts the general scheme of the coronary arterial tree varies little with the exception of minor differences. However, from time to time, specimens are observed in which congenital anomalies of the coronary vessels have afforded the patient no chance whatsoever to survive, even temporarily, the sudden occlusion of a main arterial tributary. In this discussion I shall not consider those marked anomalies, frequently associated with other congenital cardiac defects, where, for instance, the coronary arteries, instead of arising from the aorta, issue from the pulmonary artery. However, anomalies of the coronary arterial tree do exist which, in the absence of a significant obliterative arterial lesion, permit a restricted circulation and function. In this category are the few cases recorded in medical literature in which a single coronary artery supplied the entire heart. Its abrupt occlusion obviously would terminate in sudden death. More commonly, the entire posterior and lateral aspects of the left ventricle and a portion of the apex are supplied by branches of the right coronary artery in the congenital absence of the left circumflex coronary artery. Instances have also been observed in which the right coronary artery in no degree supplied the posterior aspect of the left ventricle (which it normally does) and, therefore, all of the left ventricle, except the anterior aspect and a portion of the apex, was entirely supplied by an overdeveloped left circumflex artery. Therefore, in either event, the sudden occlusion of such an anomalous artery would certainly not be conducive to survival. At the present time, no positive clinical method exists for the identification of these anomalies, although the occurrence of transient recurrent episodes of coronary insufficiency in children or young adults should always recall to mind the possibility of the condition.

As in the cases of coronary artery disease in which thrombotic occlusion has not occurred, the patients who have acute myocardial infarction are candidates for sudden death from profound disturbances of rhythm, such as ventricular fibrillation, ventricular tachycardia and asystole. It has been suggested that under these circumstances foci of increased irritability arise in the junctional zone of myocardium between the infarct and normal cardiac muscle. However, likewise in these cases, the incidence of profound disturbances of rhythm is not known, because rarely does the element of time permit graphic registration of the activity of the heart. Where extensive infarction of the interventricular septum occurs, complete heart block with or without convulsive syncope may occur soon after the occlusion and eventuate in death in a few hours or days.

It is not an uncommon observation that patients who survive sudden thrombotic occlusion of a coronary tributary and in whom transient recurrent episodes of coronary insufficiency had previously occurred, may entirely lose their painful seizures. This is explained by the fact that a new obstructive lesion has given added impetus to the developing collateral circulation.

In order to amplify my opening statement concerning the more optimistic present-day concept

of the prognosis in coronary artery disease, I shall cite briefly from the recent study of Parker, Dry, Willius and Gage. The survival rates of patients having transient recurrent episodes of coronary insufficiency (angina pectoris) were determined for a group of 3,400 patients who were examined at the Mayo Clinic over a period of twenty years and for whom follow-up data could be secured.

All survival rates of the patients in the study were compared with the survival rates of a comparable group of the normal population having the same age and sex distribution. This control is obviously the necessary yardstick for comparative study.

The highest mortality rate occurred in the first year following the establishment of the diagnosis of coronary artery disease. Thereafter the yearly mortality rate was less, although it continued relentlessly yearly throughout time. The survival rates of women were greater than those of men.

When corrected for deaths not due to coronary artery disease, the five year survival rate of patients thirty to thirty-nine years of age is definitely less than when the disease manifests itself later in life. This fact is probably based on the inadequate development of collateral circulation in the younger age groups.

Such associated conditions as cardiac hypertrophy, significant hypertension, previous cardiac infarction, congestive heart failure and significant electrocardiographic abnormalities are clearly related to a higher mortality rate and a lower survival rate.

The perfect statistical study has as yet not been conducted. Complete and, therefore, precise data cannot be ascertained until every patient in the selected group has died. My younger colleagues are dedicated to the ultimate completion of this particular investigation.

In this discussion I have considered the known factors which influence survival and death in coronary artery disease. There remains no doubt that numerous unknown factors exist. When the time comes that more conclusive knowledge relating to the genesis of atherosclerosis and arteriosclerosis with special reference to the coronary arteries is available, then perhaps active steps can be undertaken both in childhood and adult life at least to diminish the incidence of the disease and perhaps to prolong the lives of patients afflicted.

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THE DRUG ADDICT

(Continued from Page 484)

eral Narcotic Bureau is referred to the Minnesota State Board of Medical Examiners for investigation and disposition. If the physician is willing to be hospitalized under the care of a competent medical man of his own selection, until he has made an apparent recovery, no further action will be taken. He will probably be temporarily deprived of his narcotic permit, and if there is a recurrence his license to practice medicine may be rescinded. This arrangement with the Federal Narcotic Bureau is fortunate, indeed, as it gives Minnesota an opportunity to supervise and treat its own physicians who become so afflicted. Furthermore, the physician can be treated in a Minnesota hospital by a physician of his own choice, instead of being sent to the United States Public Health Service Hospital in Lexington, Kentucky.

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COLD PREVENTION STUDY

Influenza Vaccine for the Prevention of the Common Cold

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REPORTS from various sources that influenza vaccine seems to prevent attacks of the "common cold" led us to set up a simple experiment to test the possible effectiveness of influenza vaccine in this regard. Fortunately, this study was made during the winter of 1946-47 when there was relatively little influenza in this area. Therefore, the effectiveness of the influenza vaccine in preventing influenza itself was not a complicating factor in analyzing the results of this study.

The experimental subjects were University of Minnesota students. The technique of the study was the same as that followed in our previous cold prevention studies.[1-4] Early in October, 1946, there were 666 subjects enrolled in the study. They were unselected, except that it was made known that we wanted persons who were especially susceptible to colds. After receiving instructions, and after each student had filled in the questionnaire concerning the previous experience with colds, he or she was given a single injection. As an experimental group, 346 subjects received 1 c.c. of standard influenza A and B virus vaccine.* Serving as a control group, 320 students received 1 c.c. of sterile physiological saline solution. None of these students knew the nature of the injection received. Following the injection, the students were questioned periodically by questionnaire cards. Of the original 666 who were enrolled, 480 completed the study. Some of the losses were due to cancellation from school, others to lack of co-operation in the matter of reporting, and a few were eliminated from the group because their "colds" appeared to be mainly of an allergic nature.

Table I summarizes the results of the experiment. It will be noted that the vaccinated group had essentially the same number of colds as the control group during the period of the study: 2.9 colds per person and 3.0 colds per person, respectively. If one compares these numbers with the average number of colds which the students reported that they had had during the previous year, one finds that they represent a reduction of 47 per cent for those receiving the influenza vaccine and 41 per cent for those receiving the saline. It must be remembered, however, that these figures for percentage reduction are based upon the students' memories as to how many colds they had had in previous years. The fact that memories are not too reliable in this regard is indicated by the fact that many could not even recall at the end of the study how many colds they had had during the period of the study. The effect of this for the group as a whole is shown in Table II. The left hand column for each group represents the number of colds reported by the students on their periodic reports submitted during the study. The right hand column represents the answers which the same students gave to a question which appeared only on the final report. This question

TABLE I. COLD PREVENTION WITH INFLUENZA VACCINE

	Vaccine Group	Control Group
Subjects who began study	346	320
Subjects who completed study	252	228
Percentage who completed study	72.8%	71.2%
*Number of colds per person during previous year (average)	5.5	5.1
Number of colds per person during period of study (average)	2.9	3.0
Difference between average number of colds in experimental and control groups		
Number of days per person lost from school (average)	.7	.9
Percentage of group who had no colds during year	4.0%	6.6%
**Percentage of students with colds in which complications developed	19.8%	21.0%
Percentage sent to infirmary with colds or complications	1.6%	.9%
Total days in bed per 100 students in group	101.2	128.3
†Severity of colds, percentage of total colds for each group		
Mild	59.2%	59.8%
Severe	33.8%	33.9%
Very severe	6.9%	6.3%
†"Helpfulness" of vaccination, percentage of total answers		
Helpful	50.8%	51.8%
Not helpful	19.8%	22.8%
No answer	29.4%	25.4%

*Reported from memory.
**Sinusitis, otitis, bronchitis, pneumonia, et cetera. (as reported by student).
†As judged by the student himself.

TABLE II. ACCURACY OF REPORTING COLDS

	Total Colds Reported on 3 Interim Reports	Total Colds for Year as Reported at End of Study
	Vaccine Group	
Total	483	581
No. of Cases	181	181
	Control Group	
Total	499	590
No. of Cases	176	176

*Furnished from the U. S. Army supply by Service of Preventive Medicine, Office of Surgeon General, U. S. Army, through Dr. Thomas Francis, Jr., director of Commission on Influenza, Army Epidemiological Board.

asked how many colds they had had during the entire period of study. Since not all of the students answered this final question, Table II is made up on the basis of 181 subjects for the influenza vaccine group and 176 for the control group. Each group over-estimated by roughly 20 per cent.

Because of the possibility that the vaccine might have been effective soon after its administration but not later, the experience of the two groups was compared by "quarters." These quarters are not of equal length because of the necessity of getting the last report before the students started their final examinations. The first quarter extended from early October to January 6, the second quarter from January 7 to April 1, and the third from April 2 to May 15. Table III shows that this breakdown by quarters reveals no evidence of any effectiveness of the influenza vaccine in the prevention of the common cold at any time during the entire period.

TABLE III. NUMBER OF COLDS BY QUARTERS

Quarter	I	II	III
Vaccine Group Average number of colds per person	1.2	1.2	.5
Control Group Average number of colds per person	1.2	1.2	.6

On the periodic report, the students indicated whether, in their opinion, the colds that they had had during the study were mild, severe, or very severe; Table I shows that there is no difference between the vaccinated group and the control group in this regard. They also were asked to indicate on each report whether they believed that the injection they received had been helpful in preventing colds. It will be noted that roughly half of each group and 70 per cent of those who answered this question replied that they believed that the injections had been helpful.

Reactions from Influenza Vaccination

One week after the vaccination had been accomplished, cards were sent to the students asking about reactions which might have been caused by the injections which they had received. The reports are tabulated in Table IV. This is the only tabulation that shows any difference between the vaccinated and the control groups. In addition to the reactions listed, several others were written in, but of these the only one of importance was generalized urticaria reported by one subject who had received the influenza vaccine. Of special interest are the "reactions" reported by those who received the injections of physiological saline. This indicates that even in this matter a base line must be drawn when considering the reactions to an injection.

TABLE IV. REACTIONS TO VACCINATION IN COLD PREVENTION GROUP

	Vaccine Group N=320 Per Cent	Control Group N=305 Per Cent
No reaction	16.2	78.0
Sore arm	78.4	9.2
Headache	16.9	9.2
Backache	5.9	.3
General aches and pains	14.1	3.3
Chill	10.6	1.6
Fever	14.4	5.6
Incapacitated	6.9	1.0
Days lost, school or work	.06	.01
Days in bed	.06	.01

TABLE V. REACTIONS TO INFLUENZA VACCINE FROM DIFFERENT MANUFACTURERS

	"Influenza Prevention" (Influenza Vaccine by manufacturer X) N=1952* Per Cent	"Cold Prevention" (Influenza Vaccine by manufacturer Y) N=320 Per Cent
No reaction	12.8	16.2
Sore arm	79.9	78.4
Headache	26.2	16.9
Backache	11.7	5.9
General aches and pains	25.2	14.1
Chill	16.1	10.6
Fever	21.4	14.4
Incapacitated	14.0	6.9
Days lost, school or work	.08	.06
Days in bed	.10	.06

*The average age of the persons in the first column, since it included some University faculty members and employes, is a little greater than the average of those in the second column.

It was found, incidentally, that reactions to influenza vaccine varied according to the make of the product, even though the vaccines were made by the same process. At the University Health Service, a considerable number of students, faculty members, and employes were given influenza vaccine at about the same time that this cold prevention study was inaugurated. Practically all the vaccine used for this large group was made by manufacturer X, whereas the influenza vaccine used for the cold prevention study and furnished us by the Influenza Commission of the U. S. Army was made by manufacturerY. Table V compares the reports of 1,952 of the former group who replied to our questionnarie with the reports of the students in the cold prevention study who received influenza vaccine.

(Continued on Page 510)

CLINICAL-PATHOLOGICAL CONFERENCE

OMPHALOCELE

O. W. ROWE, M.D., R. C. PEDERSON, M.D., and A. H. WELLS, M.D.
Duluth, Minnesota

DR. A. H. WELLS: Omphalocele is a congenital protrusion of abdominal viscera into the umbilical cord. The lesion is referred to by a variety of synonyms including congenital umbilical hernia, exomphalocele, hernia funiculi umbilicalis, ectopia viscerum, amniotic hernia, amniotic umbilicus, amniocele, and coeloma funiculi umbilicalis persistence. We are presenting a series of five cases of omphalocele representing some of the extremes of this congenital abnormality. Undoubtedly, a better knowledge of this type of hernia will result in a much higher percentage of survival.

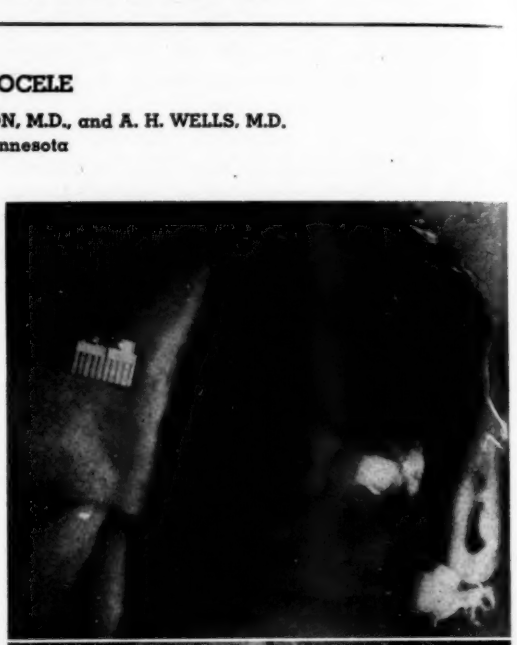
Case Presentations

Case 1

DR. R. C. PEDERSEN: A full-term, spontaneously delivered, 6 pound 13 ounce, white baby girl (Case 3666) appeared perfectly healthy at the time of birth on March 5, except for a bulging umbilical cord hernia (Fig. 1) measuring from 6 to 8 cm. in diameter. Pediatric consultation led to the use of sulfa powder and sterile dressings over the translucent hernial sac. An operation did not seem to be immediately advisable. After forty-eight hours, the infant's color became very poor, with obvious cyanosis of the lips and fingers. This cyanosis continued with periods of improvement, until her death. Continuous oxygen therapy was started on March 10. The infant took her feedings well, and although repeated x-ray examinations failed to reveal pulmonary disease, penicillin was given. The white blood count was 12,600 with 50 per cent neutrophiles. There were 4,300,000 red blood cells and 15 gm. of hemoglobin. Respirations were 97 per minute. There was a low grade fever, the temperature ranging from normal to 101° F. In spite of the recognized poor prognosis, it was deemed necessary to repair the umbilical cord hernia surgically, since there was obvious beginning gangrene of the tissue-paper-like covering of this structure. On March 15, under ether-oxygen endotracheal anesthesia, a complete circular incision around the defect in the anterior abdominal wall led to the removal of degenerating necrotic coverings of the hernia and a return of the liver tissue, which completely filled this sac, into the abdominal cavity. The fascia and skin were closed over the defect.

The infant's respirations remained rapid at 90 per minute. Her temperature rose to 102° F. She continued to have cyanosis and coughed occasionally. She expired forty-eight hours postoperatively, at the age of twelve days.

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.



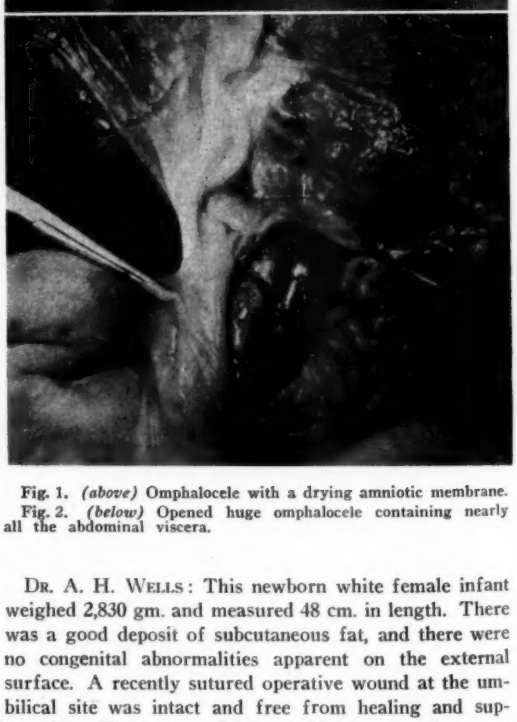


Fig. 1. *(above)* Omphalocele with a drying amniotic membrane.
Fig. 2. *(below)* Opened huge omphalocele containing nearly all the abdominal viscera.

DR. A. H. WELLS: This newborn white female infant weighed 2,830 gm. and measured 48 cm. in length. There was a good deposit of subcutaneous fat, and there were no congenital abnormalities apparent on the external surface. A recently sutured operative wound at the umbilical site was intact and free from healing and suppuration. There were flakes of fibrinous exudate over serosal surfaces throughout the peritoneal cavity, cultures of which revealed hemolytic Staphylococcus aureus.

This exudate also covered a remarkably congenitally deformed liver which could be divided into two parts of approximately equal size. One portion, represented by the right hand portion of the left lobe, had a normal contour, but was about half the usual size of these parts of the liver. A globular pedunculated mass of liver tissue, measuring 3 by 3 by 4 cm., hung by a pedicle from the left lobe of the liver and represented the portion of liver tissue which had protruded into the omphalocele and was surgically returned to the peritoneal cavity. A thin flat pedicle of fibrous tissue, measuring 2.5 cm. broad and 5 mm. in thickness, separated the left lobe from the herniated portion. The gall bladder and its ducts were not unusual. There was a mottled congestion and approximately 20 per cent atelectasis of the lobes of both lungs, which revealed many small clumps of pus cells and many squamae scattered through air spaces and bronchioles of histologic sections. The final diagnosis was omphalocele containing a congenitally deformed left lobe of the liver, with surgical correction, generalized peritonitis and bronchopneumonia.

Case 2

DR. O. W. ROWE: A seven-day-old white male infant was referred to me in a critical condition with a huge omphalocele, the size of a large orange. The hernia was covered with an extremely thin translucent membrane which was beginning to turn black in places. The child was quite dehydrated. After preliminary efforts at restoration of fluids and electrolyte balance, on June 19, twenty-four hours after admission, the hernia was repaired by Dr. Oswald Wyatt of Minneapolis at St. Mary's Hospital in Duluth. Under drop ether anesthesia, an incision was made circling the umbilical mass and extending down into the peritoneal cavity. The hernia was found to contain almost the entire mass of small bowel and the entire left lobe of the liver which was extremely swollen and edematous (Fig. 2). The round ligament containing the umbilical vein was divided and ligated. The small bowel and liver were slightly adherent to the edge of the hernial defect and were freed up by blunt dissection. With difficulty, it was possible to reduce and replace the liver and push it up under the diaphragm. With great effort and manipulation, the small bowel was finally returned to the abdominal cavity; however, the margins could not be approximated, so that the opening was closed by skin alone, using interrupted cotton through-and-through sutures. It was possible to close the peritoneum only for a short distance at the extreme upper end of the wound. There was a postoperative fever reaching as high as 101° F. Transfusions, intravenous subcutaneous fluids and antibiotics supplemented the surgical procedure. On June 25 the secondary operation of closure of the peritoneal cavity was accomplished without too much tension. There followed a long period in which it was extremely difficult to maintain fluid and electrolyte balance and feed the child. Efforts were finally successful and the child was discharged in good condition. On December 17 the referring physician, Dr. Closuit, reported that the patient was in excellent condition.

Case 3

DR. E. ZUPANC: This was a spontaneously delivered, anencephalic, stillborn, white female infant, approximately 3 months premature—a patient of Dr. Ralph Eckman. The thirty-six-year-old mother, gravida II, had had some nausea and vomiting for three months prior to delivery.

Fig. 3. Huge defect of the abdominal wall and the omphalocele covered by a transparent amniotic membrane.

DR. A. H. WELLS: This female anencephalic fetus, 23 cm. in length and weighing 720 gm., was attached to a 350 gm. placenta by a short umbilical cord (Fig. 3). Most of the abdominal viscera protruded into a huge omphalocele, including the liver, spleen, and nearly all of the small and large intestines. Other congenital anomalies included lumbar myelomeningocele, almost complete absence of the brain and spinal cord, and bilateral club feet.

Case 4

DR. E. ZUPANC: This "slightly premature" white male infant was delivered spontaneously in a Superior, Wisconsin, hospital by Dr. H. A. Sincock. The infant lived for a few minutes after birth.

DR. A. H. WELLS: A premature white male infant, weighing 1,350 gm., and 36 cm. in length, was attached to a placenta of average size by a 15 cm. in length umbilical cord (Fig. 4). At the base of the cord, the

amniotic membrane was continued as the only covering of a huge defect in the anterior abdominal wall, into which protruded the liver, stomach, small intestines and 75 per cent of the colon. The defect involved approximately half of the anterior abdominal wall, including

Fig. 4. Schematic drawing to show physiologic herniation of the mid-gut into the exoceloma.

most of the right side and superpubic area. In addition, there was a complete spina bifida, lumbar myelomeningocele, and bilateral club feet.

Case 5

DR. E. ZUPANC: This three month premature, white, stillborn female (Case 4062) was spontaneously delivered after an easy labor. The thirty-seven-year-old mother, a patient of Dr. R. J. Moe, had had no complications of pregnancy.

DR. A. H. WELLS: This premature, typically anencephalic infant measured 28 cm. in length and weighed 860 gm. The omphalocele was similar to that of Case 3 (Fig. 3). It measured 8 cm. in diameter, and the short umbilical cord was 15 cm. in length. The hernia contained the stomach, liver, spleen, small intestines, and all of the colon except the sigmoid. The abdominal cavity was extremely small. Other deformities were an absence of brain and spinal cord and a complete spina bifida.

Embryologic Etiology

DR. A. H. WELLS: In the normal process of development of the abdominal cavity and its contents, there appears a physiologic umbilical hernia, or exoceloma, at the fourth week of embryonic life, into which the mid-gut protrudes (Fig. 4). This is apparently due to increased intra-abdominal pressure at that time. At three months there is a reposition and an obliteration of the exoceloma, possibly due to decreased intra-abdominal pressure. It would then seem that an omphalocele is an arrested embryonic development, similar to the majority of the other congenital defects to which man is subject. In extreme form, there appears to be an interrelationship with abnormalities of development of whole sections of the abdominal wall, the liver and diaphragm. It has been suggested that a hyperlordosis of the spinal column could be a factor in the intra-uterine development of omphalocele. There have been references[3,4] to successive infants of the same parents having this umbilical defect. In a series of ninety-one cases[11] of omphalocele, more than one congenital defect occurred in one third of the cases. These included Meckel's diverticulum, atresia of the descending colon, spina bifida, rotation of the large intestines, epispadias, absence of common duct, macroglossia, cleft palate, hare lip, patent omphalo-enteric duct, mongoloid, imperforate anus, stenosis of colon, microcephaly hydramnion, absence of tibia and absence of radius and ulna. Omphalocele is described as occurring in from 1 in 5,000[7] to 1 in 10,000.[6] Twelve cases were described as the Public Maternity Hospital at Stockholm in 120,000 births.[8] There are approximately 400 cases recorded in the literature.[12] The sexes appear to be equally involved.[6,8]

Pathology

Umbilical cord herniae have been classified depending upon their size, contents, theoretical etiology and the extent of eventration of the adjacent abdominal wall. The lesion can vary up to the size of a child's head. In one report,[11] fifty-two cases measured less than 5 cm. in diameter, and twenty-six measured more than 5 cm. Forty-five of 155 cases contained liver in the hernial sac along with other viscera.[7] The liver alone in the sac similar to our first case has been considered rare.[10] Portions of the small and large intestines, spleen and stomach are frequently found in the sac, and rarely the heart, kidney, uterus, ovaries and omentum have been found in the hernia.[7] The defect in the adjacent abdominal wall may involve a large portion of this wall similar to our Case 4. The hernia may be so large as to interfere with labor[7] or so small as to be tied off with the umbilical tape at the time of birth.[8]

Treatment

Except for the smallest omphaloceles, there is almost unanimous agreement that surgical repair at the earliest possible moment is the treatment of choice.[2,5,9] The amniotic membrane covering the umbilical cord and the hernia within the cord is a nonvital structure which soon dries out and becomes gangrenous, permitting the entrance of bacteria into the hernia and the peritoneal cavity. Of fifty-six cases[11] repaired in the first twelve hours, 21.4 expired; of nine cases operated upon between twelve and twenty-four hours, 44.4 per cent expired; and of thirteen cases operated after twenty-four hours, 61.6 per cent expired. The important factors determining the prognosis are the diameter of the defect, the size of the hernia and delay of the operation. Newborn infants are said to tolerate the shock of anesthesia and operation satisfactorily.[9] Of forty-five cases[7] containing a portion of liver, eleven recovered. The usual procedure is to excise the hernial sac back into the margins of normal skin, return the contents of the hernia into the abdominal cavity and close the abdominal wall. Care should be exercised not to increase the intra-abdominal pressure too extensively. If there is danger of this, then the

abdominal wall fascia should be left open and the skin alone closed over the defect.

Later the peritoneum and fascial sheaths of the abdominal wall can be more easily approximated. Respiratory embarrassment, paralytic ileus, displacement of the heart and large vessels or compression of the inferior vena cava are the common complications resulting from excessive intra-abdominal pressure.[6,8,9] A possible patent urachus should be kept in mind at the time of surgical repair to avoid a urinary bladder fistula. Coexisting serious congenital abnormalities may render a surgical repair of the omphalocele futile.

Conclusions

Five cases of omphalocele have been presented. In one, the hernia was filled with a portion of the left lobe of the liver. The full-term infant expired on the twelfth postnatal day, two days after a surgical repair of the hernia, as the result of acute generalized peritonitis and bronchopneumonia. There was a surgical repair of a large umbilical cord hernia of the second case on the eighth postnatal day. Because of a disproportion between the size of the abdominal cavity and the hernial contents, the surgical opening could only be closed with skin. Subsequent closure of the entire abdominal wall led to a cure. The last three cases were infants who were stillborn or who lived only a few minutes. They had huge hernias, one of which had an associated extensive defect of the abdominal wall covered by amniotic membrane. All three had multiple other serious congenital anomalies. The embryology, pathology and treatment of omphalocele has been briefly discussed with references to the literature.

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Case Report

CEREBELLAR ABSCESS

Recovery Following Chemotherapy

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CONSIDERABLE speculation is possible in the case to be presented, and opinions as to what took place may differ. Early chemotherapy and susceptibility of the involved organism to the drugs used were undoubtedly very important factors in the good results obtained. This case is considered to be of special interest because there was no surgical intervention. Pilcher and Meacham in Spiegel's *Progress in Neurology and Psychiatry* for 1946, in discussing abscess of the brain, state: "Conservative opinions agree, for the most part, that surgical drainage is essential despite the great value of chemotherapy." The same authors write no differently in 1947. Simple aspiration of a cerebellar abscess is recommended. In the 1946 *Year Book of Neurology and Psychiatry* the editor writes: "The radical method of extirpation introduced by C. Vincent has now, thanks to penicillin, become the method of choice in dealing with abscesses. Penicillin should never be depended on to sterilize an abscess. Pus should be evacuated and penicillin used to prevent the dissemination of the infection which has heretofore been feared."

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Presented before the Minnesota Society of Neurology and Psychiatry, September 13, 1947, St. Mary's Hospital, Duluth.

Case Report

The patient was a fourteen-year-old boy, who was admitted to St. Mary's Hospital in Duluth from a small town in Wisconsin on February 16, 1947. About four weeks before, he had had a drainage from both ears, which persisted for about ten days. Two weeks before admission, he developed a severe headache in the temporal and occipital regions. Vomiting and nausea had ensued, and there had been some epistaxis (a physician had been examining the nose). There had also been a tremor in the right hand and weakness in the right upper extremity. The father stated the patient had had penicillin injections, though he was not sure of the amount, but at least twenty-nine were given during the early stage of otitis. The right ear drained more profusely and for a longer period than the left. The mother, in a later interview, said the patient had had an apparent occasional involuntary movement of the

right hand in the spring of 1946. The patient only recalled that he had a "funny feeling" in the right shoulder and right hand for a short time in the early part of 1946.

The physical examination revealed nothing pertinent. An eye, ear, nose and throat department report indicated there was no evidence of an otitis media at this time and the eardrums were dry.

Neurological examination revealed the following: The patient was a well-nourished and well-developed teen-aged boy, who was somewhat listless, though alert and co-operative to questions and directions. The recumbent position made him subjectively dizzy. There was no dysphasia. Slight stiffness of the neck was present, with a questionable Kernig's sign bilaterally. There was no tenderness over the scalp. Hearing was probably equal bilaterally. The fundi were normal except for a slight fullness of the inferior margins of both discs. The visual fields, to confrontation tests, were normal. The pupils were large but equal and reacted well to light. A horizontal nystagmus with gaze to the right, quick component to the right, and a less pronounced vertical nystagmus with upward gaze were present. (Later a slight nystagmus was also observed with gaze to the left.) Gaze to the right made the patient dizzy. The corneal reflexes were equal and the cranial nerves were otherwise intact. Slight weakness of the right upper extremity and pronounced intention tremor and adiadokokinesis were found in the right hand. There was no sensory loss to pinprick or cotton. A slight in-co-ordination of the right foot on heel to knee test was evident, and wiggling of the toes of the right foot was much slower than of the left. The tendon reflexes were considered normally active in the upper and lower extremities, though perhaps the right radial was less active than the left. The abdominals were active and equal in all four quadrants. There were no pathological reflexes, and no clonus was elicited. There may have been slightly less muscular tonus in the right upper extremity than the left. The gait and Romberg were not tested.

His temperature was normal on admission and remained thus. Laboratory reports were as follows: red blood cells 4,720,000; white blood cells 5,150 per c.c.; hemoglobin 14.1 grams and color index 1.03; Schilling —2 basophiles, 48 segmented cells, 49 lymphocytes and 2 monocytes. Urinalysis was essentially negative, except for 1 or 2 white cells. Blood culture was sterile at all times. Blood nonprotein nitrogen was 37 milligrams per cent. Sedimentation rate on February 16, 1947, was 11 mm., incomplete. Blood findings and urinalysis remained essentially normal throughout hospitalization. On February 21 the color index was reported as 0.95 with a 13.2 grams hemoglobin.

Roentgenograms of the mastoids were reported as follows: "No definite evidence of mastoiditis on either the right or left side. However, examination was incomplete, and the Law position should be made when the patient is able to co-operate."

The diagnosis was right cerebellar lobe abscess, secondary to otitis media.

Sulfadiazine and penicillin were started on the day of admission. The sulfadiazine level was brought up to 15 milligrams per cent, but the drug was discontinued after five days because of the patient's difficulty retaining it in his stomach. He received a total of 25 grams of sulfadiazine. Penicillin, 30,000 units every three hours intramuscularly, was given from the day of admission to the hospital, symptomatic treatment, including parenteral fluids, was also given. The patient's condition gradually improved, so that headache was present only intermittently and was not as severe as formerly, after he had been in St. Mary's Hospital about one week. He began to eat well, and the frequent emesis, present at first, became uncommon. The intention tremor of the right hand diminished considerably and the patient could finally touch the nose with the index finger of the right hand, which was impossible when he arrived at St. Mary's. The nystagmus diminished. Movement of the toes in the right foot improved considerably. The patient became more active and interested in his surroundings.

He was sent to the Mayo Clinic at Rochester on February 26, 1947, for consideration of operation.* By that date he had received a total of 2,160,000 units of penicillin intramuscularly in Duluth. Operation was withheld, and instead penicillin was continued in a dosage of 20,000 units intramuscularly every three hours until March 22, 1947. He received a total of 3,860,000 units of penicillin at Rochester and this plus what he was given in Duluth equalled 6,020,000 units. At Rochester, the patient appeared to make a complete recovery from what was also considered a cerebellar abscess, which was probably halted before it progressed beyond the early stages of inflammation.

The patient was seen in Duluth on August 14, 1947, and again on September 13, 1947, and the neurological examination was entirely negative each time. The patient looked well and had no complaints.

*Dr. H. L. Parker was his attending physician in Rochester.

COLD PREVENTION STUDY

(Continued from Page 505)

Summary

1. A controlled study indicates that influenza vaccine A and B is of no value for the prevention of the common cold.

2. The subjects who received influenza vaccine reported more reactions than the "control group," and the subjects who received vaccine made by one manufacturer reported more reactions than those who received vaccine made by another company.

This study was conducted at the request of the Commission on Influenza, Army Epidemiological Board, Office of the Surgeon General, U. S. Army, Washington, D. C.

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History of Medicine In Minnesota

A HISTORY OF MEDICINE IN SCOTT AND CARVER COUNTIES

(Continued from April issue)

Although the epidemic abated somewhat, more deaths occurred in the country during the next year, and several families at Jordan and Helena lost all their children. In December, 1882, diphtheria broke out in a malignant form in portions of Carver County. Ten or more children died within the first two weeks. The following May found several families afflicted at Jordan, one family having nine cases, and another family six. Eight patients died there before the second week of June. At Belle Plaine, diphtheria seemed to be on the increase, and complaints arose against the local board of health. In January, 1884, several cases appeared at Waconia, Carver County. January of the next year brought a number of cases and several deaths at Belle Plaine, and more complaints against the inactive board of health. Evidently no efficient measures could be evoked; one is led to believe that the condition was typical. In 1886 more than fifteen children died of diphtheria in Carver County, mainly in the smaller towns. Norwood, Young America, Dahlgren, Hollywood, and Watertown each lost at least one resident. At Waconia nine deaths among children were reported. It is probable that fewer than a third of the total number affected died.

During 1887, 1888, and 1889 diphtheria continued to take a small toll of children from each county. Characteristically, it flourished during the cold months. Large families had no effective way of isolating a sick child, so that two or three deaths frequently occurred in one household. Schools were closed at Camden, in 1887, and at Belle Plaine in 1888.

Certain homely treatments used for diphtheria were published in the county newspapers. "Fumes of turpentine thrown in a bowl of boiling hot water, and then cover the patient and bowl tightly in a heavy shawl" was suggested. If this failed, the recipe recommended sending for a physician.

During 1890 and 1891 diphtheria was considered epidemic at several points in Carver County, namely, Chaska, Waconia, Young America, Norwood, Camden, Benton, and Schnappsburg. The state board of health investigated the cases during December 1890. Dr. Grivelli was directed by the board to visit every school in the neighborhood and make a thorough examination of every pupil's throat. When a teacher at Camden objected to the examination, she was arrested by order of the state board of health. Under order of this board, physicians were employed to prevent the spread of diphtheria throughout the county. The towns had no provision for payments, so the bills were allowed from the county funds.

During January, 1891, the disease appeared in a fatal and highly contagious form at several towns in Scott County. Since November, 1890, there had been fifteen cases of diphtheria in the vicinity of Marystown, with eleven deaths. The disease spread to five families, and many more were exposed. Dr. J. B. Dunn was sent by the state board of health to investigate. Dr. C. N. Hewitt, secretary of the board, came at Dr. Dunn's request, and they conferred with the local boards of health in the infected districts.

Shakopee, surrounded by infected localities, forbade anyone to enter the city who "lived in a family infected with diphtheria or who attended church where any sick bodies were taken for burial or who in any way exposed himself to the contagion" until such a person had been thoroughly disinfected by a competent physician or local board of health and supplied with a certificate stating the time, place, and details of that procedure. The health officer, Dr. Dunn, effected the arrest of parties who failed to comply with the law. The *Shakopee Courier* announced that diphtheria had threatened to become epidemic in Scott County, but the prompt action of the state board of health helped to wipe it out. The statement was optimistic, perhaps untruthfully so, but at any rate diphtheria subsided in Scott County for the next three years.

Meanwhile, Chaska, lacking the equivalent of Shakopee's Dr. Dunn in the way of a health officer, experienced the most extensive scourge in years. The fall of 1892 saw sixty cases by the month of October. It spread alarmingly, unchecked by the authorities, and continued until the fall of the next year. One instance of carelessness may be cited as an example. A boy who had been very ill of the disease returned a book to the school library. Within a few days the child who had next handled the book had died. Apparently no effort was made to close the public schools that year.

In the years following, cases continued to break out from time to time. Nearly every town in the counties of Carver and Scott lost several children from diphtheria during the nineties. New Market Township in the southeast corner of Scott County counted thirty-two deaths during 1894-1896, many of them among adults. In 1894-1895 diphtheria was again epidemic at Shakopee. In January, 1897, thirteen deaths occurred from that disease in the towns of Jordan, Sand Creek, St. Benedict, and St. Lawrence. Schools were closed twice during the winter of 1895 at Hancock town. At this time, quarantine regulations were in effect in all the towns.

Generally speaking, more care was taken with diphtheria than with other diseases since it was considered the most dangerous. Diphtheria antitoxin came into general use about 1895, but it seemed to have no immediate effect in lessening the extent of the disease. Perhaps successful treatment resulted in less fear of the disease and more carelessness.

Of the other more dangerous contagious diseases, smallpox, scarlet fever, and typhoid fever, the first caused the most concern. Carver County seemed comparatively free from it, while in Scott County several towns were attacked. Many cases appeared at Jordan in 1881-1882, and in the eastern part of the county during July, 1882. Dr. James Dunn of Shakopee proved efficient on this occasion as on many others. Having found six children of Peter Saucer at Credit River ill of the disease, he sent his brother to Saint Paul to consult with the state board of health regarding a course to be pursued to prevent its spreading. Upon the return of his brother, Dr. Dunn, accompanied by a county commissioner, visited the locality and assisted the town supervisor in the organization of a town board of health and the establishment of quarantine regulations. Dr. Hewitt, secretary of the Minnesota State Board of Health, in company with Dr. Dunn, then visited the town authorities of Spring Lake, Cedar Lake, New Market and Credit River and succeeded in "awakening the necessary interest of the people and town officers to prevent its spreading." Dr. Dunn was appointed health officer for the four towns. One of Mr. Saucer's children, who died of the disease, had been sick a week, while the others attended school, and neighboring children and parents frequently visited the house. It was expected that the disease would spread in spite of precautions. In August Dr. Dunn reported, "There have been thirty-nine cases of smallpox in

six families; eight have died, others are convalescing, except three, who may be out of danger. Ten of the thirty-nine have been vaccinated; none of those ten have died, and only one was at all seriously ill, having been vaccinated years ago."

It is interesting to note that the county commissioners of Scott County petitioned the state legislature to make an appropriation to relieve the towns of Credit River and New Market from the pecuniary obligations which they, in good faith, assumed to prevent the spread of smallpox to the other parts of the state.

An incident occurred in April, 1900, which shows the dread of the disease which most of the people, including some physicians, had. Dr. Landenberger of New Prague heard of several cases of smallpox at Cedar Lake. He notified the board of health of Cedar Lake which, in turn, called upon him to investigate. Being ill, he sent Dr. McCarthy, who looked through the window at the patients and diagnosed the affliction as smallpox. McCarthy telegraphed the state board of health, and they sent Dr. William A. Hunt of Northfield to investigate. Seven cases were reported. Somewhat concerned, the local board of health then informed the state board of health, and that body sent Dr. J. B. Dunn of Shakopee. The latter made a thorough examination and reported that the patients were not suffering with smallpox but with some kind of pustulous disease of the skin.

Belle Plaine experienced a smallpox scare in August, 1894. A working girl had returned home from Saint Paul with what she thought to be chickenpox. As soon as it was diagnosed as smallpox, all at her house, and some who had just left, were vaccinated and quarantined. The girl was removed to a tent on the river bank where she was cared for by her mother and her step-father. The board of health acted promptly, effectively, and with unusual disregard for cost. The expenses involved about $300. Evidently so much had been done at the county's expense that the girl's parents expected to be paid for their services, their beer, and their fancy groceries. These bills appeared in the county records but, of course, were rejected.

Smallpox recurred throughout the state in 1899. All children had to be vaccinated before starting school that fall. No cases appeared in Scott or Carver Counties until the spring of 1900, when one case at Jordan caused the schools there to be closed. Several other cases occurred throughout Scott County that year. Actually, the smallpox cases in these counties were relatively few compared with those in other sections of the state, and also with cases of other contagious diseases within these counties.

Typhoid fever could hardly have been called epidemic at any time during the eighties and nineties. Scott and Carver Counties together averaged not more than three cases a year. At least one third of these cases, however, were fatal. In many instances, typhoid was contracted in Saint Paul or Minneapolis, and the patient returned to his home to be cared for.

Scarlet fever was prevalent at Shakopee in 1882 and 1886, and in a light form in the summer of 1889. It appeared again in the spring of 1895. No other towns in either county experienced so many cases. The total number could hardly have exceeded the number of typhoid cases, and the disease proved less fatal. Quarantine regulations probably did much to prevent its spread.

Measures were taken in the late nineties to make more explicit the duties of the town boards of health and to place the financial responsibility of their activities. In 1895 a law was passed in Carver County providing that "Each Town, Village and City shall provide for the payment of the expenses in their respective town, village, or city incurred by the control of contagious diseases." Heretofore, the towns frequently sought financial aid from the county or the state. In 1898 a state law required that every city should have a board of health to consist of not

less than three members, one of whom should be a physician, and that this physician should be the executive of the board. The terms of office and other details were specified.

Neither Carver nor Scott County could boast a hospital before 1900. Patients who could not be cared for at home went to Minneapolis or Saint Paul hospitals. It was customary for doctors in outlying towns to consult city physicians if a case proved difficult. Thus, people grew accustomed to looking to the Twin Cities for these services. It is probable that there was no adequately equipped operating room in either county until 1899, when the county physician of Scott County recommended the fitting out of such a room at the poorhouse for the use of the inmates. He was authorized to purchase the necessary furniture. At about the same time, Dr. S. N. Janes of Jordan ran a private hospital, probably very limited in size and equipment and supported for the most part by patients with chronic diseases. In 1900, Dr. M. Schober of Chaska, tried to interest the citizens in a project for the equipping of a first-class hospital in that city. He had succeeded in enlisting the co-operation of the Franciscan Brotherhood of the city and surrounding stations, and was at that time awaiting the sanction of Archbishop Ireland, of that diocese, to give his consent.

It is interesting to note that an unusually large quota of patients was sent from these two counties to the insane asylum at St. Peter. People who needed hospital care and who could not pay the price in the Twin Cities, sometimes managed to prove themselves eligible for state care and were admitted to the hospital at St. Peter. In the year 1899 six patients were sent there from Carver County alone. Knowing its value, Chaska had tried hard to get the fourth state insane asylum built there, but the institution was established at Anoka.

Medical societies flourished no better than hospitals in these counties. Contact with the Minnesota State Medical Society was established in 1869 with the election of Dr. John L. Wakefield, of Shakopee, as a member of that society. But this contact was neither close nor stimulating to most of the physicians in Scott and Carver Counties. Not more than eight or ten, altogether, became members before the turn of the century.

The Scott County Medical Society was organized about 1887 and continued for about three years. Its members were Drs. James B. Dunn, C. A. Entrup, A. B. Walter, M. H. Manson, G. R. Moloney, and J. F. Mulholland. No record of the society's aims remain, but a fee table used by them in general practice and surgery is in the possession of the Minnesota State Medical Association. The Scott and Carver County Medical Society, a more permanent institution, was organized in 1904. Many of the physicians now practicing in these counties have been active members of that organization.

Biographical Dictionary

Curtis B. Ames came to Chaska, Scott County, in April, 1866, to practice medicine. In 1869 he moved to Watertown, also in Carver County. Ames was very popular while in Watertown, having the political support of the Democrats there. In December, 1870, he was elected county physician at a salary of $450 a year. In the fall of 1872 he moved to Delano, Wright County, and a few months later he left with his family for Vicksburg, Mississippi.

C. B. Ames was the son of Dr. A. E. Ames, one of the oldest and first physicians of Minneapolis. He was reported to have been graduated from

one of the best medical institutions in the country, and also to have served in the Civil War.

F. M. Ball came to Carver, Carver County, in April, 1874. He remained only a short time, and in 1886 was established at Montrose, where he manufactured and sold a remedy for pulmonary diseases.

Charles Berry practiced medicine in Belle Plaine, Scott County, in 1866. He moved to New Ulm about 1870, where he was called by the Rev. Father Berghold to go in with him in building a hospital.

N. P. Birmingham was a physician who practiced in Belle Plaine, Scott County, in 1876 and a few years following. He succeeded Dr. Pashley after the latter's death.

F. J. Bohland practiced medicine in Belle Plaine, Scott County, in 1890 and for ten years or more after that. In 1896 he served as United States pension examining surgeon. He was county physician in 1879-1900, being assigned to that part of the county only. F. J. Bohland was born in Brooklyn, New York, on September 29, 1866. His early life was spent in Germany. When seventeen years of age, he came to Minnesota and completed his education at the state university.

John W. Bowers was graduated from the College of Physicians and Surgeons of Baltimore, Maryland, in 1882. He practiced in Chaska, Carver County, about 1887 and for two years or more thereafter.

F. W. Brett settled in Waconia, Carver County, in June, 1899. He was a graduate of Rush Medical College and served in various Chicago hospitals for a number of years. He held the position of surgeon for the Chicago and North Western Railroad at the time of his coming to Carver County. He was the son of Dr. C. Brett of Green Bay, Wisconsin.

W. P. Cash (or W. G. Cash) practiced in Norwood, Carver County, in 1878, and for nine years following. He served as county coroner in 1886. In February, 1887, he went to Louisville, Kentucky, for another course of study. In November of the same year he returned to Norwood. He became very ill and decided to move to Duluth.

Charles T. Chamberlain was graduated from the University of Michigan College of Medicine in 1884. In 1886 he was a resident of Belle Plaine, Scott County. Two or three years later he moved to Jordan and practiced there until his death in 1892.

P. L. Cormack opened an office in Jordan, Scott County, in September, 1878. In the following March he moved with his family to Dexter, Mower County, where he managed a drugstore in connection with the practice of medicine.

F. W. Cram came to Belle Plaine about 1878, and in 1879 moved to Jordan, where he became the co-partner of Dr. Walter. He was a graduate of Rush Medical College, and a very promising and popular young doctor. In October, 1880, he married Miss Dora Walter, the daughter of his partner, and in May, 1881, moved to Sheldon, Iowa, where he met with success.

Charles L. Davenport came to Shakopee in 1856 and formed a co-partnership with Dr. Weiser. He died in 1869 at Fort Adams, Mississipi, at the age of forty-five years.

S. B. Davis came to Carver, Carver County, in September, 1865, after having been for four years in the army as an assistant surgeon. About a year after his arrival he published in the Chaska newspaper a list of surgical operations performed by him in July, 1866. Eleven case histories were given, including the names of the patients, all of whom had recovered or were nearly well at the time of publication (August 11, 1866). He soon built up a large practice in Carver and the vicinity. In October, 1866, he received the commission of postmaster of Carver, but resigned a year later to go on a hunting excursion. He returned to Carver but remained only a short time.

Henry R. Diessner, a homeopathic physician, graduated from the Hahnemann Medical College, Chicago, in 1883. In January, 1884, he settled at Waconia, Carver County. His practice extended to Hamburg, Norwood, and Mayer. Dr. Diessner was one of the few homeopathic physicians in the county, and he had a good following of patients from the time of his arrival. In 1886, at the time of the diphtheria epidemic, he acted as health officer of Waconia. He was the most active Republican in the county. In 1897 he was elected a delegate-at-large from this state to the annual meeting of the Republican League Clubs convening at Detroit. The year following he was chairman of the Republican County Committee. He assumed control of the *Waconia Patriot,* the local paper, in 1899. At that time he was considered one of the most prominent citizens and businessmen in the county. During the years 1888 and 1894, he held the office of coroner for the county; also during the nineties he was postmaster at Waconia, chief of the Waconia fire department, secretary of the county Farmers' Alliance, on the United States exammining board for pensions, and on the immigration committee for Carver County.

H. S. Donoho was graduated from the McDowell Medical College of St. Louis. He came to Chaska to practice in September, 1868. After remaining for two months, he moved to Rockford, Wright County, to associate himself with Dr. Richardson. The following April, he died of pulmonary consumption at the age of twenty-five years.

Dr. Dover came to Carver in 1867. The following statement was published at the time of his death in March, 1868:

> . . . Dr. Dover was a man of great intellect. He was without doubt one of the most thoroughly educated men in the State, and a good physician. But the Doctor was addicted to strong drink and it carried him away at last. . . .

James H. Dunn was born May 29, 1853, at Fort Wayne, Indiana. In 1854 the family located in Winona, and after the death of his father, in 1859, James H. Dunn was adopted in the family of Mr. Jesse Wheeler, of Winona County. At the death of Mr. Wheeler in 1868, Dunn entered the state normal school at Winona and by his own efforts supported himself until his gradution in 1871. He was at once employed as lecturer in the State Teachers Institute by the Hon. H. B. Wilson and later by Mr. Wilson's successor. During the intervals Dunn was principal of the Alexandria and South Center

schools, and completed a course in natural science at the University of Chicago. He then gave his whole time to the study of medicine, and in 1878, after a three years' course, he received the degree of doctor of medicine from the University of the City of New York, having spent a year of study at Bellevue Hospital and other hospitals in that city. In the fall of 1878 he was appointed instructor of natural sciences in the normal school at Mankato, which position he resigned in May, 1880, to enter upon the practice of his profession at Shakopee.

Dr. James H. Dunn was a skillful and successful surgeon and had a wide practice throughout the county. In 1882 he was given complete charge, as health officer, of the severe smallpox epidemic in the vicinity of Credit River and New Market. During the following year he took his brother, John B. Dunn, into partnership. In 1884 he traveled extensively in Europe, spending much of his time in study. In May of the year 1885 he moved to Minneapolis. He married Miss Agnes Macdonald of Shakopee in the fall of the same year. In Minneapolis he built up a large and successful practice, and became professor of surgery at the state university after the resignation of Dr. Charles A. Wheaton.

John B. Dunn was graduated from Rush Medical College in 1883 and entered into partnership with his brother, Dr. James H. Dunn of Shakopee, Scott County. Their card read:

Jas. H. Dunn Jno. B. Dunn
Dunn & Dunn
Physicians & Surgeons
Shakopee, Minnesota
Surgical and other important cases attended
at a distance by train or team.

The partnership continued until May, 1885, when Dr. James H. Dunn moved to Minneapolis and left Dr. J. B. Dunn in charge of the Shakopee practice. During his stay in Shakopee, Dr. J. B. Dunn acted as city health officer (1890-1892) and as county physician (1885, 1889, 1892 and 1894). He was a successful physician and very well liked in the community. He was anxious to practice in a larger place, however, and in 1887 he moved to West Saint Paul, a community of 20,000 persons, but after a trial of two months he returned again to Shakopee. During the winter of 1892-1893 he studied in Chicago. In February, 1893, he moved with his family to St. Cloud, Minnesota. He was a member of the Scott County Medical Society, which was organized about 1887, and a member of the Minnesota State Medical Society.

(To be continued in the June issue)

President's Letter

OVERTONES OF MEDICAL PRACTICE

Recently a well-known minister, addressing his congregation on what he termed the "overtones" of life, emphasized that there are many things in living besides the "meat and potato" existence. These overtones consist of the things which one does to make life more beautiful and just as in music the overtones lend color and appeal to the selection, so in daily life they contribute largely to the enjoyment of living.

A similar parallel is found in medicine. If a physician thinks of nothing but the daily routine of house calls, office practice, the operating room or the laboratory, he is soon in danger of losing the overtones which are so important to the successful practitioner. A good physician must embody more and must give more than just "meat and potato" medicine. He must on entering the sick room or the operating room infuse the patient with a sense of not only his skill but his human understanding. Look around you today and you will find those very qualities among the well-known professional leaders, which leads directly to the point I am trying to make—

Do medical conventions have a worthwhile purpose?

This question at some time or other is asked by every physician. Is it worth the effort to interrupt one's practice and incur the necessary expense and discomforts of travel? Every physician will agree to the importance of the aims of advancing scientific medicine and the wisdom of pooling his efforts with those of other physicians to extend medical service and advance medical standards. He will also acknowledge a purely selfish reason for going to a medical convention—that of self-improvement. I would venture to predict, therefore, that even the physician who possibly leaves a convention feeling he hasn't accomplished much, actually has made observations, contacts, discoveries of far greater value that he immediately realizes.

The broadening of the physician's practical knowledge through attendance at the scientific sessions; the stimulation and inspiration derived from reviewing the scientific exhibits; the exchange of helpful ideas with professional associates, both in meeting hall and in corridor; and the natural "lift" and enthusiasm which inevitably stem from the fellowship of such a gathering—all of these are powerful factors in creating those overtones which, if properly applied in everyday practice, serve commensurately to elevate the professional status of the physician, increase the service he is able to offer those in his community, and heighten both the regard in which he is held and the rewards which he may rightly expect for such service.

Annual conventions of the Minnesota State Medical Association have a reputation for consistently contributing in a broad way to these intangible but vital overtones of medical practice, and this year's meeting will be no exception. Since the entire program as planned by the Committee on Scientific Assembly, is printed elsewhere in this issue of the JOURNAL, I will not attempt to summarize it here. Certain highlights, however, are worthy of special attention.

As a unique departure from the scientific programs of former years, a series of Clinico-Pathological Conferences is planned for each morning during the general scientific assembly. Members of our own Association and authorities of other states will participate to provide an unparalleled opportunity for general discussion and instruction. Also, the public gathering on the last day, always an inspiring feature of our state meetings, will this year feature a panel of distinguished speakers exploring means of keeping the health of the people in Minnesota at a high level. Representatives of allied health organizations and other groups interested in health will be invited to attend this session.

The swiftly accelerating tempo of medical trends demands that every doctor make an earnest attempt to keep abreast of modern medical progress. Fortunately, members of the Minnesota State Medical Association have abundant and superior educational opportunities afforded them at the 1948 meeting, June 7 to 9, if they will but take advantage of them.

A. E. Caudle

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

THE STATE MEETING

THE program of the ninety-fifth annual session of the Minnesota State Medical Association appears elsewhere in this issue.

Simultaneously with the general scientific session, sessions will be conducted in the specialties, and an innovation this year will be the clinics in the various specialties to be held in several Minneapolis hospitals. Wednesday afternoon will feature the Public Health meeting, to which are invited all those interested in public health matters, such as social welfare workers, school and government authorities, and representatives of farm, labor, professional and civic groups. This meeting will be addressed by Dr. A. E. Cardle, president of the MSMA, Dr. John O. Christianson, superintendent of the University of Minnesota School of Agriculture, Lloyd E. Harris of Rochester, Senator Joseph H. Ball, Robert L. Novy, president of Michigan Medical Service, Inc., and Dr. Morris Fishbein. An attendance of some 1,500 is expected.

A social hour at the Hotel Radisson through the courtesy of Mr. George Ulmer, president of the Physicians and Hospital Supply Company of Minneapolis, will precede the annual banquet, also to be held at the Radisson Hotel. Addresses by President Cardle and Nicholas Amtoroff of New York will follow.

These are some of the highlights of the program. Those who attend will be able to make considerable selection in the way of clinics, round table discussion luncheons, scientific cinema, scientific and commercial displays. The distinguished guests from without the state always prove an attraction and the program lists a goodly number who will take part in the program this year.

Every member who can possibly absent himself from his practice, owes it to himself and his patients to take advantage of this opportunity.

DOCTORS AND THE PUBLIC SERVICE

THE U. S. Army needs more doctors. It now has some 1,200 regular army medical officers, approximately the same number it had at the beginning of World War II. It needs 3,000. Having a capacity of only 300 to 400 medical residencies in its army hospitals, the army has instituted a program to commission during the next two years some 600 residents and 600 interns in civilian hospitals and leave them in the civilian hospitals for their training on full army pay and allowances. One year of service for each year of training will be required of those commissioned during their hospital training, although the purpose of this step is the training of physicians for a medical career in the army as specialists and otherwise.

This plan is a special inducement to increase the medical personnel of the army but will take several years to develop the personnel needed. As everyone knows, legislation is being considered for the re-establishment of a Selective Service System and for the first time in our history for the inauguration of a National Service Training program. Included in the proposal are provisions for induction of doctors of medicine, dentistry and veterinary medicine under the age of forty-five "in accordance with such procedures as the President may prescribe." The registration and classification of doctors will doubtless provide for the allocation of the total medical means of the country in case of a great emergency. Presumably, those who received medical training at government expense and those under thirty-five who have had little or no service will be on the priority list.

As voluntary recruitment in the army has not been sufficient to maintain our army at a strength deemed necessary for national protection, a compulsory National Service Training program has been considered necessary. If enough medical men do not enlist to meet requirements, the drafting of doctors would seem the only logical step to take. Never in time of war has it been necessary to draft the medical profession. In peace-

time, there is not the same incentive of patriotism for physicians to enter the armed services. Assurance has been given that in case of another war, the regular army physicians and surgeons will not be delegated to administrative jobs but will rather continue their professional specialties. A career in the army thus should be more attractive to the scientifically inclined medical man.

The Veterans Administration is said to be having difficulty in obtaining sufficient medical personnel for their hospitals. Recourse has already been had to assigning regular army doctors to some of their hospitals. The attempt may be made to assign drafted medical men to the VA hospitals, which procedure is bound to meet with violent opposition. It is to be hoped that drafting of doctors for the army and navy will not be necessary, but drafting them for veterans' hospitals would be a definite example of governmental autocracy.

The medical profession agrees heartily that the veterans are entitled to the best of medical care for disabilities resulting from their service to their country. That large percentages of the inmates of veterans' hospitals are being treated for conditions unrelated to service is, and has been for years, a source of irritation to the medical profession.

According to present regulations, hospital beds in veterans' hospitals are allocated to veterans with non-service-connected ills when available. Possibly, the solution of the dilemma which seems to be confronting the Veterans Administration will be, of necessity, a more strict limitation of hospital beds to service-connected cases.

The private practice of medicine is facing a serious situation if, with the provision of additional veterans' hospitals and care being provided for some 8 million veterans for both service-connected and non-service-connected disabilities, this large block of the population is to be withdrawn from the private field. The situation will be even more serious if an attempt is made to include hospital care for the families of veterans. This would add some 50 million more to the number eligible for hospital care at government expense.

Of course, the lack of veterans' hospital facilities to care for the large number of veterans suffering from service-connected disabilities resulted in the happy solution whereby the services of private physicians were employed. This has been a source of some income to private physicians, particularly in the outpatient care of veterans suffering from service-connected disabilities. Outpatient care in the large centers of population being in large measure supplied by government-operated clinics, physicians outside the centers have profited more than those in the cities. It is said that the time consumed by veterans in attending the outpatient clinics operated by the Veterans Bureau has made them less popular than the services rendered for the Bureau by private physicians.

Every effort should be made to forestall the inclusion of the care of non-service-connected disabilities for veterans and their dependents even though the profession at large is used to supply that care. This would place the burden of the medical care of half the population of the country on the shoulders of the taxpayers.

MINNESOTA BLUE SHIELD PLAN

THIS issue contains on page 584 a communication from Mr. Arthur M. Calvin, Executive Secretary of the Minnesota Hospital Service Association, embodying the plan for the proposed Blue Cross—Blue Shield national association which evolved from the conference of representatives of national organizations held in Los Angeles on March 30, 1948.

As stated in an editorial entitled "Proposed Blue Cross-Blue Shield Merger," which appeared in our March issue, considerable opposition has been voiced to the plan of the merger as first proposed. A perusal of the new plan, as outlined in Mr. Calvin's communication, will show that the functions of the proposed national association of the two plans will be carried out by a Board of Governors and an Executive Committee equally representative of the Blue Cross and Blue Shield organizations and the American Hospital and American Medical Associations. It would seem, too, that ample provision will be made so that there will be no danger that the national association will encroach upon the autonomy of the state plans.

The new proposal that the national association of the Blue Cross and Blue Shield plans shall be an association of state plans, and not a large national insurance company, would seem to dispel the criticism that a large national insurance

company is to be formed in competition with private insurance companies. As a matter of fact, private insurance companies and medical associations have a common interest in providing hospital and medical insurance to meet the public demand and obviate the need of compulsory governmental insurance. While the non-profit hospital and medical plans sponsored by the hospital and medical associations have been showing satisfactory progress, the private insurance companies have also been markedly increasing their sale of policies. The medical profession wishes them the best of success, and we would go so far as to wish them godspeed, even if through better organization and insurance know-how they show themselves able to undersell our non-profit organizations. The important point is that hospital and medical insurance shall be widespread enough to meet the need.

At the inaugural dinner of the Minnesota Blue Shield Plan, which is Minnesota Medical Service, Inc., held at the Coffman Memorial Union at the University of Minnesota on April 13, several hundred interested guests heard a number of representatives of hospital, medical and nurses' organizations wish the Minnesota Blue Shield Plans success. The meeting was also addressed by the guest of honor, Dr. Paul R. Hawley, who is the present executive officer of the combined Blue Cross and Blue Shield commissions. Medical and hospital organizations can say "Amen" to the sentiments expressed by the former general.

METHIONINE IN THE TREATMENT OF CIRRHOSIS OF THE LIVER

THE frequent occurrence of cirrhosis of the liver in alcoholics has been explained as due not to the alcohol but to dietary deficiency. In the past, the treatment of cirrhosis has been on the whole futile.

Since attention was called to the value of methionine in the treatment of certain forms of hepatitis due to chemical poisoning, the hope has been expressed that this amino acid might be of some value in the treatment of cirrhosis of the liver. A recent editorial[1] in *The Journal of the American Medical Association* indicates that it has.

Beams and Endicott[2] have reported a short series of cases of cirrhosis in which liver biopsies were taken before and after treatment with high protein diet, crude liver injections and large doses of brewers' yeast—one series receiving 2 to 5 grams of methionine by mouth daily, and the other series not. While all the patients who received the methionine and some of those who did not receive it showed a favorable response, as indicated by histological changes in the liver, and while clinical improvement did not always correspond to improvement in the liver, methionine was given the credit for the better outcome in the patients treated.

In the nine patients who received the treatment supplemented with methionine, all showed histologic changes in the liver indicating a favorable response to the treatment. Five of them showed clinical improvement also, and three have remained well from one to two years. Two of the five patients ate poorly, continued to use liquor, and had recurrences after seven and twelve months, respectively.

The reported favorable results from the outlined treatment including methionine indicates further clinical trial.

1. Editorial. Hepatic Cirrhosis treated with methionine. J.A.M.A. 136:934, (April 3) 1948.
2. Beams, A. J. and Endicott, E. T.: Gastroenterology. 9:718, 1947.

MINNESOTA DEPARTMENT OF HEALTH

The Section of Medical Laboratories of the Minnesota Department of Health continues to offer microscopic, bacteriologic, and serologic examinations for all infectious communicable diseases, reports Dr. Paul Kabler, chief of that section. Recently, additional tests have been made available for virus and rickettsial diseases, primarily the encephalidites and pulmonary infections.

For best results in diagnostic tests for virus and rickettsial diseases, the laboratory requires a specimen collected during the acute phase of disease and another specimen collected during the convalescent stage, usually three to four weeks later. These two specimens are essential for comparative purposes, because it is the increase of antibody content during the intervening period that is of prime diagnostic significance. A full vial of blood should always be submitted for serologic tests.

"Submission of adequate specimens for laboratory diagnosis will greatly assist both the practicing physician and the Section of Medical Laboratories," says Dr. Kabler. "Physicians will receive better service if specimens sent to the laboratories are collected carefully, in adequate amounts, and mailed promptly, accompanied by the data card completely filled out with the test desired plainly stated. The chance for mis-diagnosis is augmented when specimens are collected too hastily or kept too long before they are mailed."

The laboratories of the State Department of Health constitute one of the oldest sections of the organization.

A laboratory was operated by Dr. Charles N. Hewitt, first state health officer, in the early days of the Health Department at Red Wing, Minnesota. In 1893, the laboratory work of the Board of Health was moved to the University Campus, and since that time the work has continued to be done there. However, the Health Department laboratories have no administrative connection with the University.

CANCER—A NEW MEDICAL JOURNAL

A new medical journal entitled *Cancer*, to be published by the American Cancer Society, will appear shortly. As the title intimates, the journal will be devoted to the subject of cancer from a surgical, medical, radiological, public health and educational standpoint and will publish original articles of high calibre only.

A long list of scientists representing clinical medicine and research makes up the Editorial Advisory Board, with Fred W. Stewart, M.D., acting as editor, Harry E. Ehrlich, M.D., assistant editor, and Douglas A. Sunderland, M.D., as abstract editor.

It is felt that although two important cancer journals now exist, they are largely devoted to reports of experimental laboratory research, and clinical papers are scattered among numberless other journals. *Cancer* will be devoted to the subject of cancer with major emphasis on clinical reports and experimental studies of particular value to those interested in the subject.

Original papers may be submitted to the editor, Dr. Fred W. Stewart, 444 East 68th Street, New York 21, New York.

WARNING—CUTTER LABORATORY INTRAVENOUS PREPARATIONS CONTAMINATED

In late April, hospitals were notified by the AMA to discontinue use of Intravenous solutions manufactured by Cutter Laboratories, Berkeley, California, because of contamination discovered in one batch of glucose solutions for intravenous use. Discovery of contamination in another and entirely different glucose solution, dextrose 10 per cent in Ringer's solution, has led the company to warn hospitals and physicians not to use any of the Cutter preparations intended for intravenous use until the thus far unsolved source of contamination has been found. Even the flasks made by the Cutter Laboratories should not be used. Products should be returned to the laboratory.

TUBERCULOSIS AND ERYTHEMA NODOSUM

Even if not more than two-thirds of the cases of erythema nodosum are associated with a tuberculous primary infection, it is obvious that every tuberculin-positive case must be treated in private practice as a possible expression of tuberculosis until thorough examination has shown that this possibility can be ruled out. The best guide to the etiological diagnosis seems to be the vesicular tuberculin reaction.—Hans Jacob Ustvedt, M.D., *Tubercle*, December, 1947.

In Memoriam

WARREN FETTERLY

Dr. Warren Fetterly of Minneapolis, formerly of Virginia, Minnesota, was found dead in his garage April 6, 1947. Death had been caused by carbon monoxide poisoning, presumably the day before.

Dr. Fetterly was born in Minneapolis, March 7, 1903. He obtained a B.S. degree from Hamline University in 1926 and an M.D. degree from the University of Minnesota in 1929. He interned at St. Mary's Hospital in Duluth and was associated with Dr. G. R. Dunn in Minneapolis seven years before joining the Malmstrom-Sarff Clinic in Virginia in 1937.

He is survived by his wife.

LEO A. HILGER

Dr. Leo A. Hilger, of Saint Paul, died December 30, 1947, after several weeks' illness.

Dr. Hilger was born in Pierre, South Dakota, on January 21, 1887, and came to Saint Paul in 1896. His early education was at Cretin High School and St. Thomas College, and he was graduated from Marquette Medical School in 1913.

He began practice in Saint Paul in 1914 after an internship in St. Joseph's Hospital. He was associated with his brother, Dr. Dave Hilger, and for many years worked with Dr. Fred Plondke at St. John's Hospital. He was Chief-of-Staff at St. Joseph's Hospital and for twenty-five years devoted his time and his excellent surgical knowledge caring for the indigent sick at the Ancker Hospital.

Dr. Hilger was a member of the Ramsey County Medical Society, Minnesota State Medical Association, American Medical Association, Saint Paul Surgical Society, a fellow of the American College of Surgeons, and Chief Surgeon of the Omaha Railway.

He is survived by his wife, Mary, three children and one sister and four brothers.

Edward C. Gibbs, M.D.

EDWARD H. NELSON

Dr. Edward H. Nelson of Chisholm, Minnesota, died at the Hibbing General Hospital on March 29, 1948, following a long illness.

Dr. Nelson was born in Minneapolis, March 30, 1875. He obtained his medical degree from Hamline Medical College in 1903 and interned at St. Barnabas Hospital in Minneapolis.

He joined the staff of Rood Hospital, now the Mesaba Clinic, on March 25, 1904. For the past eight years, he had been manager of the Mesaba Clinic.

Dr. Nelson served as mayor of Chisholm in 1910, 1911, 1918 and in 1929, and for twenty-one years was a member of the board of education at Chisholm.

He was a member of the Masonic Lodge and the Elks. In 1940, he was honored at a testimonial dinner

tendered by the Junior Chamber of Commerce of Chisholm.

He was a member of the St. Louis County Medical Society, the Minnesota State Medical Association, and American Medical Association.

On July 26, 1905, Dr. Nelson married Marie Saucier of Minneapolis.

He is survived by his wife and two daughters, Lucille Nelson of Minneapolis and Mrs. Irving Coryell of Chisholm, and a half brother, Dr. Kenneth R. Nelson of Boston.

LEO P. MOONEY

Dr. Leo P. Mooney, practicing physician of Graceville, Minnesota, since 1936, died of a heart attack on March 12, 1948. He had been ill two weeks.

Dr. Mooney was born at Madison, Minnesota, October 4, 1896. He obtained his medical education at the University of Minnesota, graduating in 1926. Following an internship at St. Mary's Hospital, Minneapolis, he practiced at Marble, Minnesota, from 1927 to 1936, when he moved to Graceville.

He was a member of the West Central Minnesota Medical Society, the Minnesota State Medical Association and American Medical Association.

HARRY OERTING

Dr. Harry Oerting was born in Saint Paul, Minnesota, in 1887. His preliminary education was completed in Saint Paul, and he received his Doctor of Medicine degree from Harvard University in 1917. He served as first lieutenant in World War I.

Dr. Oerting was very active in both medical and other scientific circles. He was a member and a former president of the Ramsey County Medical Society, a member of the Minnesota State Medical Association and the American Medical Association. He was also a member of the Central Society for Clinical Research. He was assistant clinical professor of medicine at the University of Minnesota, and he was certified by the American Board of Internal Medicine. He held memberships on the staffs of Ancker Hospital, the Charles T. Miller Hospital, St. Joseph's Hospital and St. Luke's Hospital. He was also a member of many lay organizations.

Dr. Oerting died after a brief illness on January 30, 1948, as a result of a coronary thrombosis. He is survived by his wife, Marie Johnson Oerting, and a daughter, Dorothy Oerting.

JOHN F. BRIGGS, M.D.

GEORGE BROSIUS WEISER

Dr. George B. Weiser, of New Ulm, died March 23, 1948, after an illness of several months. He was ninety years of age.

Dr. Weiser was born at Dalmatia, Pennsylvania, on September 7, 1857. He graduated from the Jefferson Medical College in 1897. He later took a supplementary course at the Philadelphia School of Anatomy and a special course in skin diseases under Professor J. V. Shoemaker in Philadelphia.

He began practice in McKees Half Falls, Pennsylvania, in March, 1879, but came to New Ulm in 1893. He had practiced over sixty years when he retired several years ago. Dr. Weiser had an active, long and useful life. He was a member of the board of education of New Ulm from 1898 to 1921 and president of the board for twenty years, a member of the first advisory commission of the Minnesota State Sanatorium for Tuberculosis, a member of the Minnesota State Board of Medical Examiners from 1917 to 1933, and twice president of the Board. He served as Associate Editor of MINNESOTA MEDICINE from 1918 to 1937. He was a member and former president of the Redwood-Brown Medical Society, and a member of the Minnesota State Medical Association and the American Medical Association. He was chairman of the Brown County Republican Committee from 1914 to 1932, a member of the Brown County Exemption board during World War I, and public school physician for many years. He was president of the Brown County Bank for a number of years, vice president of the Essig State Bank, director of the Citizens State Bank and the State Bond and Mortgage Company.

On October 2, 1890, Dr. Weiser was married to Sarah C. Schoch at Selingsgrove, Pennsylvania. Mrs. Weiser died on February 24, 1948. One daughter, Mrs. C. J. Ekelund of Pontiac, Michigan, and three granddaughters survive.

Several years ago, Dr. Weiser and Mr. Jacob Klossner, Jr., were honored by the members of Charity Lodge on the occasion of their fiftieth anniversary as members of the Masonic order. He took a great interest in the affairs of the local masonic fraternity and upon the fiftieth anniversary of the Charity Lodge, penned the history of the local fraternal group.

CLAUD WHITING WOODRUFF

Dr. C. W. Woodruff, practicing physician of Chatfield, Minnesota, for forty-three years, died March 24, 1948, at Pomona, California, after a long illness. He was seventy-one years old.

Dr. Woodruff was born at Elgin, Minnesota, October 17, 1876. After attending the University of Minnesota for three years, he graduated from Rush Medical College in 1901.

He practiced at St. James for a few months, then moved to Wykoff, Minnesota, and in 1905 came to Chatfield.

Dr. Woodruff served in the army medical corps during World War I and was chairman of the World War II Fillmore County draft board during its existence. He was an active member of the Olmsted-Dodge-Fillmore-Houston County Medical Society, the Minnesota State Medical Association and American Medical Association. He was also a member of the Masonic fraternity, including the Shrine, Knights Templar and Scottish Rites. He was also chairman of the Board of Trustees of the Chatfield Presbyterian Church for many years.

On October 29, 1902, Dr. Woodruff married Dora Dunn of Elgin. Mrs. Woodruff died on May 5, 1947, and a son, Paul, died in August, 1939. Surviving him is his daughter, Helen, who was with him in California when he died.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

IMPARTIAL AGENCY VETOES COMPULSORY HEALTH INSURANCE

A significant statement on medical care for the individual prepared by the Brookings Institution of Washington, D. C., an impartial agency, has been released. It points out quite objectively certain defects in the compulsory system now being proposed for our national health program.

It would seem unwise at this time, the Brookings Institution concludes, to substitute by national law for the present system, a system of compulsory health insurance which would have the "unfortunate tendency to freeze policies and eventually retard medical progress."

The statement follows a study of the national health picture made at the request of Senator H. Alexander Smith of New Jersey, who, in his position as chairman of the subcommittee on health of the Senate Committee on Labor and Public Welfare, has been investigating proposed federal health legislation.

Particularly under scrutiny have been S. 1320 (successor to the Wagner-Murray-Dingell bill of 1946) and S. 545, the Taft-Smith-Ball-Donnell bill.

Present System Basically Sound

That the present system of providing health care is basically sound is one of the most important conclusions drawn in the Brookings report. Proceeding from that point it discusses objectively some of the weak points and flaws that exist and suggests possible corrective measures; compulsory health insurance as a solution is flatly vetoed.

The medical profession has always maintained that no other nation in the world has better health than that enjoyed in the United States and that a system of medical service with that kind of record should not be scrapped. This point is emphasized in the Brookings report.

The report compares health in the United States with that of other countries—as their health conditions existed before being thrown off base by the war—and concludes that "no great nation in the world has among its white population better health than prevails in the United States. A few small homogeneous countries such as New Zealand with respect to its white population are slightly ahead of the United States as a whole, but certain states of the United States with larger populations equal them."

A greater progress in the application of medical and sanitary science than any other country is also noted. Reference is made to low mortality and morbidity rates for the infectious diseases and an increase in life expectancy, and it is shown that this general trend toward improvement is apparently going to continue.

Draft Statistics No Argument

Considering the ferment over the rate at which young men were rejected from the draft and the way the figures have been used to show evidence of failing American health, it is interesting that the Brookings report declares that "the so-called draft statistics are unreliable as a measure of health of the nation and cannot be used to show the extent of the medical needs of the country as a whole."

No argument to support this contention has been released at this time. The present report is a preliminary to a more detailed one to be presented later and to include discussion and data upon which the conclusions are based. In preparing the report, Drs. Lewis Meriam and George W. Bachman, two of the Institution's senior staff members, both of whom are familiar with government service, medical research and public health, analyzed the major issues involved in the question of changing the present system through examining extensively the literature in the field. They also examined statistics, government administrative policies and procedures, population trends and social and economic problems related

to health and drew upon experience in administration and research in the field of public health, disease control and medical relief. No attempt, however, is made to deal with strictly medical problems.

Suggest Different Approach

The Brookings Institution report attacks some of the solutions being advanced for present health problems. For example, the subsidy for areas which cannot support adequate public services, the report says, will not do the job. This problem of providing health work, education, highways, etc., for extremely poor rural areas with little or no resources must be handled with an entirely different approach, perhaps importing newer or better economic activities or moving the people to areas less bleak and less expensive to administer. As for health insurance, compulsion won't do either, the report shows. *People won't be any more able to pay a health tax if it is forced upon them than they would be ordinarily able to budget for medical bills on a voluntary basis.* The alternative for those who *can* pay is to let them decide for themselves how much health care they are willing to pay for and then to take out insurance if they so desire. For those unable to pay, no matter what system is used, provision will still have to be made for them through public funds or charity, it is pointed out.

Other arguments against compulsion are advanced. It is shown that compulsory health insurance would mean tight government control over people and agencies in medical and health work. This field would be harder to manage than any other yet entered by the government, requiring thousands of employes. Such control would tend to discourage initiative and development. Then the whole question of the difficulty of eliminating politics comes in, as does the danger of government interference threatening the doctor-patient relationship, which would ultimately affect the quality of medical service. Costs of medical care would skyrocket to make up for the administrative burden. What it boils down to is that the people will be paying *more* for an *inferior* product.

Compulsion Won't Meet Demand

Compulsory health insurance is not going to create services where none exist, nor will it stretch facilities, the report points out. There are not enough facilities or trained workers—doctors, nurses, dentists—to meet the demand for service that a national program of the type proposed would stimulate.

Methods of paying physicians under such a plan were also studied by the Institution. Of the three known methods—fee for service, per capita and salary, none can be fitted into the system without socializing the profession. Fee for service would be least likely to shackle the profession, but it would be difficult to administer. Difficult to handle also would be the per capita system, which calls for a higher degree of socialization. Almost complete socialization, the report says, would come from the salary system.

Could a country once committed to compulsory health insurance turn back if headed for the rocks? Wouldn't it rather have to patch up defects with even more rigid federal control and administration? These questions are left to the health insurance advocates by the Brookings Institution. The report doesn't ask that they be put to a test; results might be disastrous. Instead it makes a series of recommendations—(1) Leave it up to the individual states to decide whether compulsory health insurance should be adopted or the health professions should remain free; (2) Devote resources and energies of the federal government to research in public health, health education at school level, teaching preventive medicine, assisting in providing physical facilities and training personnel and caring for indigents; (3) Leave adult education campaigns for control and prevention of disease to national, state and local voluntary organizations. It must be remembered, the report emphasizes, that *good health is not exclusively a matter of medical care.*

Governors Oppose Compulsion

In his attempts to get at the current opinions from persons other than those connected with health on national health legislation, Senator Smith not only called in the Brookings experts, but he also put the question to the governors of the forty-eight states. Results should be heartening to physicians—not a single governor favored federalizing medicine.

Senator Smith outlined the two proposals now before Congress, S. 1320 and S. 545. Of the thirty-nine governors reporting, all of them turned thumbs down on S. 1320 which calls for payroll taxes and other taxes to pay for an over-all medi-

cal program by the government. S. 545, which would allot federal grants to states in order that they might develop their own programs was approved by twenty-five of the governors. Five did not like either measure; eight indicated no preference. Nine governors did not reply.

BRITISH DOCTORS PROTEST INCREASED SOCIALIZATION

Attempts by the British Labor Government to push through a program of increased state control over medicine has met with severe opposition. British doctors have voted to boycott the universal free medical service plan, scheduled to take effect July 5, 1948..

What the British Medical Association objects to most are the features which make the physicians salaried servants of the state; take away their rights to choose the form, place and type of work they prefer; and do not give the medical profession adequate representation in the administration of the program.

The program was worked out according to principles laid down by Sir William Beveridge and will be directed by Minister of Health Aneurin Bevan. Not only was the British medical profession not consulted in the development of details, but on the eve of the plebiscite held by the doctors to determine whether they would participate, Mr. Bevan charged the British Medical Association with conspiracy and sabotage.

Conflicts with Standards

The new national health service plan conflicts with the traditions and standards of medicine, said the doctors as they voted against it 24,340 to 4,084. Furthermore, they maintain that they have been heretofore servants of their patients and do not wish to take on the additional burden of serving a top-heavy state plan.

"Public safety demands that the individual doctor shall be free to certify what he finds in his patient without fear of government influence." This statement was made by the Council of the British Association; it reflects the majority opinion of all British doctors.

The present move to nationalize medicine in Britain is not a sudden development. It has been on the way since 1942. Final enactment is due to the efforts of the present labor regime. The plan includes nationalization of all hospitals; doctors will be compelled to get government approval to hospitalize patients. The state will dole out all supplies, drugs and equipment. The pattern of socialism is followed through once more—the tendency it has to expand controls until the entire system is taken over.

WORLD HEALTH ORGANIZATION FAILS TO GET U. S. SUPPORT

With the blessing of the American Medical Association, the American Public Health Association, and practically every public health organization in the United States, the World Health Organization was born in New York City in July, 1946. This great charter for world health has been bypassed by the United States.

The Senate passed the bill to make the United States a member, but for some reason the House of Representatives tabled a bill to aid in establishing the WHO. The United States has taken the lead in supporting world-wide efforts at disease control, preventive medicine, nutrition, research, sanitation, housing. It seems strange that our lawmakers would thus neglect or ignore these very aims.

At the time of its founding, those who worked out the plans believed that the world was never more in need of a World Health Organization. The objectives were to secure the highest possible level of health for all people, to help the world back to health and sanity. It was hoped sincerely that these aims would be accomplisheed. Yet, how can they be accomplished without the support of this country?

The Medical Society of the State of New York has sent to Washington a resolution summarizing the need for an agency to promote health and to urge immediate rescinding of the action by the House of Representatives so that the United States can assume its proper role in assisting international co-operation for health.

O'BRIEN MEMORIAL PROFESSORSHIP

The Minnesota Division of the American Cancer Society at its April meeting established a full professorship in cancer research at the University of Minnesota, dedicated to the memory of Dr. William A. O'Brien, who was president of the division for ten years before his death. A $5,000 fellowship which was established by the division three years ago, and which is held at present by Dr. Robert A. Huseby, will be extended to the full professorship.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary
230 Lowry Medical Arts Building
Saint Paul, Minnesota

Two Women Plead Guilty to Abortion Charge

Re State of Minnesota vs. Alma D. Peterson and Laura M. Finn.

On April 12, 1948, Alma D. Peterson, fifty-eight years of age, 6 Spruce Place, Minneapolis, entered a plea of guilty to an information charging her with the crime of abortion. On the same date, Mrs. Peterson also pleaded guilty to an information charging her with two prior convictions. Following a statement of the facts to the Court, Mrs. Peterson was sentenced to serve one year in the Minneapolis Women's Detention Home. Judge Hall told Mrs. Peterson that she would have to serve the entire year and that her sentence would not be shortened by the Court.

Mrs. Peterson and the defendant, Laura M. Finn, forty-five years of age, 9 South Ninth Street, Minneapolis, were arrested on March 10, 1948, by Minneapolis police officers following the hospitalization of a twenty-four-year-old unmarried Minneapolis woman. The patient was suffering from the after effects of a criminal abortion. The case was promptly reported to the Minnesota State Board of Medical Examiners, and the subsequent investigation resulted in the arrest of both defendants. The patient stated that she had contacted the defendant Finn, who, in turn, arranged to have the defendant Peterson actually perform the abortion. The abortion was performed by means of a catheter, and the sum of $100 was paid to the defendant Finn. Mrs. Finn retained $70.00 and gave the defendant Peterson $30.00 for doing the abortion.

The defendant Finn entered a plea of guilty on March 22, 1948, to an information charging her with the crime of abortion. Because of the fact that Mrs. Finn had a good record prior to her arrest, she was sentenced to a term of not to exceed two years in the Women's Reformatory at Shakopee by the Hon. Levi M. Hall, Judge of the District Court, and placed on probation for two years. The case against Mrs. Peterson was continued to April 12, on which date it was disposed of as stated above. The Court refused to place the defendant Peterson on probation for the reason that Mrs. Peterson was convicted of criminal abortion in the District Court of Hennepin County, on December 8, 1934, and again on February 7, 1944. In each of the prior cases, Mrs. Peterson was placed on probation. Neither of the defendants has any medical training.

CHRISTIAN MEDICAL SOCIETY

The annual convention of the Christian Medical Society will be held on June 25 and 26 in the Illini Building, 715 South Wood Street, Chicago, Illinois. An organization of physicians and medical students, the society recognizes no denominational barriers. With a membership exceeding 500, the organization has student members on more than thirty medical campuses and active groups on more than half of those campuses.

Reports and Announcements

AMERICAN CONGRESS OF PHYSICAL MEDICINE

The American Congress of Physical Medicine will hold its twenty-sixth annual scientific and clinical session September 7, 8, 9, 10 and 11, inclusive, at the Hotel Statler, Washington. D. C. Scientific and clinical sessions will be given the days of September 7, 8, 9, 10 and 11. All sessions will be open to members of the medical profession in good standing with the American Medical Association.

In addition to the scientific sessions, the annual instruction courses will be held September 7, 8, 9 and 10. These courses will be offered in two groups. One set of ten lectures will be based primarily on physics and physiology, and attendance will be limited to physicians. One set of ten lectures will be more general in character and will be open to physicians as well as to physical therapists. The physical therapists must be registered with the American Registry of Physical Therapy Technicians. Full information may be obtained by writing to the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

CHICAGO MEDICAL SOCIETY POSTGRADUATE COURSES

Two postgraduate courses will be offered to physicians of the country in September by the Chicago Medical Society. The first course, Hematology and Neurology, will be given September 13 to 18, and the second, Cardiovascular and Respiratory Diseases, will be held September 20 to 25.

Sessions will be held in Thorne Hall on the Northwestern University Medical School campus. The faculty for the courses will be comprised of an outstanding group of teachers from all sections of the United States.

Further information may be secured from the Chairman, Committee on Postgraduate Medical Education, Chicago Medical Society, 30 North Michigan Avenue, Chicago 2, Illinois.

FREEBORN COUNTY SOCIETY

Tuberculosis was the subject for discussion at a meeting of the Freeborn County Medical Society in Albert Lea on March 18. Dr. Karl Pfuetze, of Mineral Springs Sanatorium at Cannon Falls, as the principal speaker, discussed results of x-ray surveys carried out last fall and reviewed the use of streptomycin in the treatment of tuberculosis.

Guests at the dinner included Dr. Henri Duloud of France and Dr. Chih Li Chu of China, both of whom are engaged in special work at the Cannon Falls sanatorium.

MINNESOTA STATE MEDICAL ASSOCIATION

Ninety-Fifth Annual Session

Minneapolis Auditorium, Minneapolis, Minnesota
June 7, 8, and 9, 1948

ANNOUNCEMENTS

Sectional Program—This year's program is again divided into two sections to be conducted simultaneously. The general scientific assembly will convene each day in the ground floor lecture hall to the left of the exhibit hall. Section meetings will be held on the mezzanine floor off the main corridor leading to the lecture hall.

Scientific Cinema—Scientific motion pictures will be shown in a room to the right of the exhibition hall before each morning and afternoon session, at the conclusion of the Monday and Tuesday sessions, and at each intermission. Provided by the Medical Film Guild, which has produced several research projects this year, each film represents a postgraduate course in the specialty covered. Of note is "Management of the Failing Heart," "A Clinic on Deafness," "Arterial Blood Pressure—the Instruments, Technique and Physiology," "Hypothyroidism," and many others. These films are available to the local medical societies at no charge; costs are defrayed by grants for postgraduate instruction. Projection service is also included at no charge.

Round Table Luncheons—A series of twenty-one Round Table Discussion Luncheons has been arranged for this meeting at Hotel Radisson. A set of ten luncheons will be held on Tuesday and ten on Wednesday; one luncheon is scheduled for Monday. Tickets may be purchased in advance for these luncheons, all of which are held at 12:15 p.m. Lists of subjects and leaders are printed in the program and on the reservation cards mailed with the program. Attendance at each luncheon is limited to *thirty;* late comers are accommodated according to their choice if limits have not already been reached. Tickets $2.00, tips included.

Public Health Meeting—A special conference entitled "An Unfinished Job" will conclude the convention program on Wednesday afternoon, June 9. Distinguished guest speakers will present a thorough and frank discussion of health needs, showing medicine's part and the interplay of other factors influencing health and welfare. Invited will be members of allied health organizations, social welfare workers, school and government authorities and representatives from farm, labor, professional and civic groups.

Medal—The Southern Minnesota Medical Association will again award a medal to the individual physician presenting the outstanding scientific exhibit. The award will be made at the banquet Tuesday evening, June 8, at Hotel Radisson.

Fifty Club—Tribute will be paid to members who this year have completed fifty years of practice in Minnesota by election to Minnesota's "Fifty Club." Candidates will be honored at the Banquet Tuesday evening and will be presented with lapel buttons and certificates at that time.

Technical Exhibits—A large and varied array of technical exhibits will be on display in the Exhibition Hall of the Minneapolis Auditorium. Every convention visitor will want to visit the booths for the opportunity, which they provide, of looking over what's new in the line of physicians' supplies and equipment, pharmaceuticals, medical books, et cetera; also, the revenue from sale of exhibit space makes possible the high quality of scientific program which characterizes our Minnesota meetings.

Woman's Auxiliary—Physicians' wives attending the meeting may secure programs for the business and social sessions of the Woman's Auxiliary at the Women's Registration Desk on the mezzanine floor of Hotel Radisson. All visiting women are cordially invited to attend the special events arranged by the hostesses of the Hennepin County Medical Auxiliary. Among these is a tea Monday afternoon at the Women's Club of Minneapolis, 410 Oak Grove Street, and the Annual Meeting and Luncheon at 10 a.m. and 1 p.m., respectively, at Hotel Curtis. Visiting women may attend the Breakfast at 10 a.m. Wednesday, June 9, in the Medical Arts Lounge.

SPECIAL SESSIONS

In addition to the general sessions to be held on Monday, Tuesday and Wednesday in the general lecture hall on the ground floor to the left of the exhibition hall, there will be five special section meetings in the mezzanine lecture hall. These will be held during the morning of each of the three convention days and Monday and Tuesday afternoons. Intermission periods will be observed from 10:15 to 11 a.m. and again from 3:15 to 4 p.m. at each session so that those who attend may visit exhibits, demonstrations and the scientific cinema.

Monday, June 7

9 a.m.—Symposium on Surgery of Emergencies (Orthopedic and Fracture Surgery)

2 p.m.—American College of Chest Physicians, North Midwest Chapter

Tuesday, June 8

9 a.m.—Symposium on Research Problems

2 p.m.—Minnesota Academy of Ophthalmology and Otolaryngogoly

Wednesday, June 9

11 a.m.—Minnesota Heart Association

CLINICS

A special feature at this meeting is a series of clinics at several Minneapolis hospitals, conducted by staff members, arranged for Tuesday and Wednesday. *Admission will be by ticket only; free tickets procurable at the Registration Desk, Auditorium.*

Tuesday, June 8

St. Barnabas Hospital—920 South 7th Street

8 a.m.—A Demonstration of Pre- and Post-Operative Parenteral Nutrition in Surgical Patients, Carl O. Rice, *et al.*

9 a.m.—A Demonstration of Caudal Anesthesia in the Obstetric Patient, John T. Moehn and O. F. Robbins

10 a.m.—A Demonstration of a New Principle in the Management of Heart Disease, Arthur Kerkhof, *et al.*

Asbury Hospital—916 East 15th Street

8 a.m. to Noon
- —A Demonstration of Varicose Vein Ligation, H. O. McPheeters, *et al.*
- —Gall Bladder Surgery, Henry Hoffert
- —General Surgery, Stanley Maxeiner, *et al.*
- —Fluorescein Visualization of Peripheral Vascular Circulation, H. A. Alexander

Wednesday, June 9

Abbott Hospital—110 East 18th Street

8 to 11 a.m.—Rectal Operations, W. A. Fansler, J. K. Anderson, *et al.*

Northwestern Hospital—810 East 27th Street.

9 a.m.—Pediatric Techniques, E. S. Platou, *et al.*

10 a.m.—Clinical Conference, Medical Staff, J. C. Miller, *et al.*

Veterans Hospital—54th Street and 48th Avenue South (Fort Snelling)

9:30 to 11 a.m.—Neurological Rehabilitation, Andrew J. Leemhuis and Louis C. Jenson, Building 55, Station 50 (Fort Snelling)

2 to 3 p.m.—Peripheral Vascular Diseases, Frank W. Quattlebaum, Conference Room, Building I (Veterans Hospital)

MOVIES

A series of special movies will be shown, by arrangement with the Local Committee, at various times during the convention at the Auditorium in Booth S-26.

Alimentary Diverticula—Horace G. Scott, Minneapolis

Facia Transplant Hernia Repair—Hamline A. N. Mattson, Minneapolis

Lumbar Ureterotomy for Stone—Frederick E. B. Foley, St. Paul

Progress of Patients with Poliomyelitis, Treated from 1946—Frederick J. Kottke, *et al,* Department of Physiology, University of Minnesota

Thyroidectomy—Martin Nordland, Minneapolis

Tourniquet Amputations—Stanley R. Maxeiner and C. D. Adkins, Minneapolis

Vein Ligations—H. O. McPheeters, Minneapolis

DEMONSTRATIONS

There will be a series of five obstetric manikin demonstrations arranged by the Committee on Maternal Health under the auspices of the Minnesota State Department of Health. Three of these will be presented at Round Table Luncheons, at 12:15 p.m. Monday, Tuesday and Wednesday, Hotel Radisson; the other two will be presented at 5:15 p.m. Monday and Tuesday in the Lecture Hall on the Mezzanine Floor at the Minneapolis Auditorium.

The first manikin demonstration will be given at 12:15 p.m., Admiral Room, Hotel Radisson, by Harold L. Gainey, Assistant Professor of Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City, who will repeat the demonstration at 5:15 p.m. that same day at the Auditorium.

On Tuesday, June 8, the demonstrator will be Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha; the first demonstration to be given at 12:15 p.m. Admiral Room, Hotel Radisson, and again at 5:15 p.m. at the Auditorium.

John E. Faber, Department of Obstetrics and Gynecology, Mayo Clinic, Rochester, will perform the final demonstration at 12:15 p.m., Spanish Room, Hotel Radisson, Wednesday, June 9.

GUEST SPEAKERS

We are indebted to the following societies and organizations for guest speakers at this meeting:

The Minnesota Academy of Ophthalmology and Otolaryngology—Speaker, Dean McAllister Lierle, Professor of Otolaryngology, State University of Iowa College of Medicine, Iowa City.

The Minnesota Department of Health—Obstetric manikin demonstrators, Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha; and Harold L. Gainey, Assistant Professor, Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City.

Minnesota Medical Service, Inc.—Speaker, Robert L. Novy, President, Michigan Medical Service, Inc., Detroit.

The Minnesota Radiological Society—Speaker, Paul Chesley Hodges, Professor of Radiology, University of Chicago, who will deliver the annual Russell D. Carman Memorial Lecture in Radiology.

The Minnesota Society of Clinical Pathologists—Speaker, Benjamin J. Clawson, Professor of Pathology, University of Minnesota, who will present the annual Arthur H. Sanford Lecture in Pathology.

The Northern Minnesota Medical Association—Speaker, Michael L. Mason, Associate Professor of Surgery, Northwestern University Medical School, Chicago.

The Northwest Pediatrics Society—Speaker, Russell J. Blattner, Professor of Pediatrics, Baylor University College of Medicine, Houston, Texas.

Other visiting speakers at this meeting:

The Honorable Joseph H. Ball, Senator from Minnesota, Washington, D. C.

John O. Christianson, D.Sc., Superintendent, University of Minnesota School of Agriculture, St. Paul.

Morris Fishbein, Editor, *Journal of the American Medical Association,* Chicago.

Erle Henriksen, Associate Professor of Gynecology and Consulting Pathologist, University of Southern California, Los Angeles.

Walter G. Maddock, Northwestern University Medical School, Chicago.

Ovid Otto Meyer, Chairman, Department of Medicine, University of Wisconsin, Madison.

GOLF

The Annual Golf Tournament of the Minnesota State Medical Association will be held at the Interlachen Country Club, Minneapolis, with tee-offs at 11 a.m. and 2:30 p.m. Details are being arranged by a committee, chairman of which is Dr. L. O. Doyle, Minneapolis. All medical golfers are being invited to enter and compete for the attractive prizes that have been donated.

HOBBY SHOW

The Physicians' First Annual Hobby Show will be held at the Minneapolis Auditorium all during the convention. A wide variety of interesting articles—representing the avocations of Minnesota doctors—will be on display: samples of wood carving, basket weaving, etchings, sketches and collections of everything from stamps to buttons. All Minnesota physicians may participate. L. G. Idstrom, Minneapolis, is chairman of the committee in charge.

SOCIAL EVENTS

Annual Banquet—The annual dinner for members, guests and their wives will be held at 7. p.m. Tuesday, June 8, in the Ballroom of Hotel Radisson. Nicholas Amtoroff, distinguished Russian physician, author and lecturer, and A. E. Cardle, Minneapolis, President of the Minnesota State Medical Association, will be banquet speakers. Tickets $4.00.

Preceding the Banquet there will be a social hour, from 5 to 6:30 p.m. on Tuesday, June 8, in the Italian Room, Hotel Radisson, arranged by the Entertainment Committee of the Hennepin County Medical Society and Mr. George Ulmer, President, Physicians and Hospitals Supply Company and the Ulmer Pharmacal Company of Minneapolis.

"A Midsummer Dream"—At 8 p.m. Monday, June 7 in the Ballroom of Hotel Radisson, the Dayton Company of Minneapolis, by arrangement with the Hennepin County Medical Society, will present a revue of fashions for summer, 1948, with a background of music. This will be followed by an evening of dancing. Music will be provided by Fred Oldre and his orchestra.

American College of Chest Physicians, North Midwest Chapter, Luncheon—At Noon Monday, June 7, Room 118, Hotel Radisson, chest physicians will hold a luncheon meeting. Reservations should be made in advance with S. S. Cohen, Oak Terrace.

Medical Women's Luncheon—The American Medical Women's Association, Minnesota Branch, will hold a luncheon meeting at the Curtis Hotel, 12:30 p.m. Monday, June 7, to which all women physicians are cordially invited. For reservations communicate with Nora Winther, 512 Medical Arts Building, Minneapolis.

Medical Veterans of World War II will meet at a luncheon at 12:30 p.m. Monday, June 7, at Hotel Radisson. Charles H. Mead, Jr., 815 Fidelity Building, Duluth, is in charge of advance reservations.

Minneapolis General Hospital Surgical Residents Society will hold their annual dinner for members and wives in the Admiral Room of Hotel Radisson, at 6 p.m. Monday, June 7. Advance reservations are to be made with Albert T. Hays, 1149 Medical Arts Building, Minneapolis, MAin 7458.

The Minnesota Society of Clinical Pathologists will hold a luncheon meeting 1 p.m. Wednesday, June 9, at the Leamington Hotel. For reservations contact Kano Ikeda, Miller Hospital, St. Paul.

Nu Sigma Nu Annual Get-Together—There will be a reunion of members of the Nu Sigma Nu Medical Fraternity at the Minneapolis Club for cocktails, dinner, and a social evening, on Monday, June 7, beginning at 5:30 p.m. Notify Charles N. Hensel, 613 Lowry Medical Arts Building, St. Paul, if you plan to attend.

Phi Beta Pi Medical Fraternity—All Phi Bets from every chapter are invited to a luncheon meeting at 12:30 p.m. Tuesday, June 8, at the Curtis Hotel. Plans will be announced later and tickets will be on sale at the Registration desk at the Auditorium. Arrangements are being made by J. K. Anderson, 1829 Medical Arts Building, Minneapolis, and F. F. Wipperman, 1921 Medical Arts Building, Minneapolis.

COMMITTEE ON SCIENTIFIC ASSEMBLY

Members of the Committee on Scientific Assembly who have worked diligently in preparing this year's program are:

A. E. Cardle, M.D., Minneapolis, *General Chairman,* L. A. Buie, M.D., Rochester, and R. R. Rosell, Saint Paul.

Section on Medicine—S. H. Boyer, Jr., M.D., Duluth, and R. V. Sherman, M.D., Red Wing.

Section on Specialties—Francis W. Lynch, M.D., Saint Paul, and C. J. Ehrenberg, M.D., Minneapolis.

Section on Surgery—J. T. Priestley, M.D., Rochester, and D. A. MacDonald, M.D., Minneapolis.

Local Arrangements—Charles E. Proshek, M.D., Minneapolis.

SCIENTIFIC PROGRAM

Monday, June 7

SECTION I—GENERAL SESSION

A.M.

8:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

9:00 *Clinical-Pathological Conference*.....General Lecture Hall
Subject: CARDIOVASCULAR-RENAL DISEASES
Presentation of Cases—Elexious T. Bell, Minneapolis
Differential Diagnoses—Ovid Otto Meyer, Chairman, Department of Medicine, University of Wisconsin, Madison

10:15 *Intermission*

Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

11:00 *Panel Discussion:* EMBOLIC PHENOMENA AND THEIR TREATMENT..General Lecture Hall
Moderator: James S. McCartney, Minneapolis
Thrombophlebitis } —Herman O. McPheeters, Minneapolis
Thrombosis }
Dicumarol and Heparin—Nelson W. Barker, Rochester

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration.....Admiral Room, Hotel Radisson
(Luncheon Meeting)
Harold L. Gainey, Assistant Professor, Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City

1:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

2:00 *Panel Discussion:* SURGERY OF INJURIES.....General Lecture Hall
Moderator: Edward T. Evans, Minneapolis
Injuries of the Hand and Forearm—Michael L. Mason, Associate Professor of Surgery, Northwestern University Medical School, Chicago
Bladder Injuries—Baxter A. Smith, Jr., Minneapolis
Abdomino-Thoracic Injuries—Nathan K. Jensen, Minneapolis
Head Injuries—Wallace P. Ritchie, St. Paul
Injuries of the Lower Extremeties—Henry H. Young, Rochester

3:15 *Intermission*

Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

4:00 *Russell D. Carman Memorial Lecture*.....General Lecture Hall
Subject: THE ROLE OF X-RAY PELVIMETRY IN OBSTETRICS—Paul Chesley Hodges, Professor of Radiology, Department of Medicine, University of Chicago
Presentation of Speaker: H. Milton Berg, Bismarck, N. D., President, Minnesota Radiological Society

5:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

5:15 Obstetric Manikin Demonstration.....Lecture Hall, Mezzanine Floor
Harold L. Gainey, Assistant Professor, Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City

8:00 "A MIDSUMMER DREAM".....Ballroom, Hotel Radisson
(Listed under Section II—Special Session)

Monday, June 7

SECTION II—SPECIAL SESSION

A.M.

9:00 *Orthopedic and Fracture Surgery*.....Lecture Hall, Mezzanine Floor
Chairman: Edward T. Evans, Minneapolis
Subject: SURGERY OF EMERGENCIES
Abdomino-Thoracic Injuries—Lyle J. Hay, Minneapolis, and Nathan K. Jensen, Minneapolis
Head Injuries—Wallace P. Ritchie, St. Paul

10:15 *Intermission*

Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

11:00 *Orthopedic and Fracture Surgery*, (Continued).....Lecture Hall, Mezzanine Floor
Hand and Forearm Injuries—Michael L. Mason, Associate Professor of Surgery, Northwestern University Medical School, Chicago

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration.....Admiral Room, Hotel Radisson
(Luncheon Meeting)
Harold L. Gainey, Assistant Professor, Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City

1:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

2:00 American College of Chest Physicians, North Midwest Chapter.....Lecture Hall, Mezzanine Floor
Moderator: J. Arthur Myers, Minneapolis
Dangers of Delay in the Diagnosis of Indeterminate Pulmonary Lesions—C. Allen Good, Rochester
Discussion: E. P. K. Fenger, Oak Terrace, and Thomas Lowry, Minneapolis
Some Experiences with Streptomycin in the Treatment of Tuberculosis in the Veterans Administration—William B. Tucker, Minneapolis
Discussion: Russell Frost, St. Paul, and Karl Pfuetze, Cannon Falls

3:15 *Intermission*

Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

4:00 *American College of Chest Physicians,* (Continued)...Lecture Hall, Mezzanine Floor
Nebulization Therapy for Pulmonary Diseases—Arthur Olsen, Rochester
Discussion: J. Arthur Myers, Minneapolis, and G. A. Hedberg, Nopeming
Diagnosis of Peripheral Lung Tumors Observed in Chest Survey—David Sharp and Robert Nord, Minneapolis
Discussion: William Roemmich, Minneapolis, and Sumner S. Cohen, Oak Terrace

5:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

5:15 Obstetric Manikin Demonstration.....Lecture Hall, Mezzanine Floor
Harold L. Gainey, Kansas City

8:00 "A Midsummer Dream".....Ballroom, Hotel Radisson
For the members of the Minnesota State Medical Association and their wives and all convention visitors . . .

At eight o'clock on the evening of June 7, 1948
The Dayton Company of Minneapolis
will present
"A Midsummer Dream"
featuring fashions for summer, 1948, with a background
of music by Fred Oldre and his orchestra
Dancing from nine to twelve in the Ballroom to the
music of Fred Oldre and his orchestra.

Tuesday, June 8

SECTION I—GENERAL SESSION

A.M.

8:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

9:00 *Clinical-Pathological Conference*.....General Lecture Hall
Subject: Acute Abdominal Pain
Presentation of Cases—Arthur H. Wells, Duluth
Differential Diagnosis—Walter G. Maddock, Northwestern University Medical School, Chicago

10:15 *Intermission*

Scientific Cinema .....West Corridor
Visit Scientific and Technical Exhibits

11:00 *Panel Discussion:* Nutrition in Surgery.....General Lecture Hall
Moderator: Albert M. Snell, Rochester
Parenteral Feeding in Surgery—Walter G. Maddock, Northwestern University Medical School, Chicago
Entoral Feeding—Richard L. Varco, Minneapolis

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration.....Admiral Room, Hotel Radisson
(Luncheon Meeting)
Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha

12:15 Round Table Luncheons.....Hotel Radisson
(Listed under Section II—Special Session)

1:00 Scientific Cinema .....West Corridor
Visit Scientific and Technical Exhibits

2:00 *Panel Discussion:* ANTIBIOTICS ..... General Lecture Hall
Moderator: Wesley W. Spink, Minneapolis
Present Trends in Penicillin Therapy—Samuel H. Boyer, Jr., Duluth
Streptomycin and Newer Antibiotics in Infections Other Than Tuberculosis—Wallace E. Herrell, Rochester
Streptomycin in Tuberculosis—Karl Pfuetze, Cannon Falls
Summary—Wesley W. Spink, Minneapolis

3:15 *Intermission*

Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

4.00 *Pediatrics Lecture:* ST. LOUIS ENCEPHALITIS ..... General Lecture Hall
Russell J. Blattner, Professor of Pediatrics, Baylor University College of Medicine, Houston, Texas
Presentation of Speaker: Irvine McQuarrie, Minneapolis, representing the Northwestern Pediatrics Society

5:00 Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

5:15 Obstetric Manikin Demonstration ..... Lecture Hall, Mezzanine Floor
Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha

5:00 SOCIAL HOUR PRECEDING THE BANQUET
Five to Six-Thirty o'clock in the
Italian Room, Hotel Radisson

Mr. George Ulmer, President, Physicians and Hospitals Supply Company and the Ulmer Pharmacal Company of Minneapolis. EVERYBODY is invited to attend.

7:00 *Annual Banquet* ..... Ballroom, Hotel Radisson
(Listed under Section II, Special Session)

Tuesday, June 8

SECTION II—SPECIAL SESSION

A.M.

9:00 *Symposium on Research Problems* ..... Lecture Hall, Mezzanine Floor
Chairman: James T. Priestley, Rochester
Treatment of Leukemia with Urethane—Howard Horns, Minneapolis
The Extraction of Secretion from the Intestine of Man—A. H. Baggenstoss, Rochester
Fundamental and Clinical Aspects of Pulmonary Hypertension—Craig Borden, Minneapolis
Measurement of Portal Vein Pressure in the Intact Animal—F. W. Hoffbauer, Minneapolis, and J. L. Bollman and John Grindlay, Rochester
Experiences with Screening Tests in the Detection of Cancer—David State, Minneapolis

10:15 *Intermission*

Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

11:00 *Symposium on Research Problems* (Continued) ..... Lecture Hall, Mezzanine Floor
Extrarenal or Prerenal Azotemia—John La Bree, Minneapolis
Clinical Measurement of the Viscosity of the Plasma—Frank D. Mann, Rochester
Effect of Vagotomy on Intestinal Motility—S. Faik, Rochester
Fluorescein in the Diagnosis of Brain Tumors—George Moore, Minneapolis

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration ..... Admiral Room, Hotel Radisson
(Luncheon Meeting)
Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha

12:15 Round Table Luncheons ..... Hotel Radisson
Common Skin Diseases—Merriam G. Fredricks, Duluth
Hypertrophies in Children—Paul F. Dwan, Minneapolis
The Nervous Patient—Francis J. Braceland, Rochester
Radioactive Iodine in the Treatment of Thyroid Disease—Charles E. Rea, St. Paul
Antihistamine Drugs—Bayard T. Horton, Rochester
Management of Hand Infections—Michael L. Mason, Chicago
Ménière's Disease and Vertigo—Lawrence R. Boies, Minneapolis
Insulin Mixtures—John R. Meade, St. Paul
Urethane, Nitrogen Mustard—Edmund B. Flink, Minneapolis

2:00 *Minnesota Academy of Ophthalmology and Otolaryngology* ..... Lecture Hall, Mezzanine Floor
Plastic Submucous Resection Otoplasty—Dean McAllister Lierle, Professor of Otolaryngology, State University of Iowa, College of Medicine, Iowa City

3:15 *Intermission*

Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

4:00 *Minnesota Academy of Ophthalmology and Otolaryngology* (Continued) ..... Lecture Hall, Mezzanine Floor
Histamine in Ophthalmology and Otolaryngology—Bayard T. Horton, Rochester

5:00 Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

5:15 Obstetric Manikin Demonstration ..... Lecture Hall, Mezzanine Floor
Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha

5:00 Social Hour Preceding Banquet ..... Italian Room, Hotel Radisson
Through the courtesy of Mr. George Ulmer, President, Physicians and Hospitals Supply Company and the Ulmer Pharmacal Company of Minneapolis

7:00 Annual Banquet ..... Ballroom, Hotel Radisson
Presiding: Ralph H. Creighton, Minneapolis, President, Hennepin County Medical Society
Presentation of guests
Introduction of Mrs. Harold F. Wahlquist, Minneapolis, President, Woman's Auxiliary
Presentation of Southern Minnesota Medical Association Medal
Presentation of Distinguished Service Medal
Presidential Address: "The New Look in Medicine," A. E. Cardle, Minneapolis, President, Minnesota State Medical Association
"Medicine—A Force for Peace"—Nicholas Amtoroff, R.S.B.T., New York

Wednesday, June 9

Section I—General Session

A.M.

8:00 Scientific Cinema ..... West Corridor.
Visit Scientific and Technical Exhibits

9:00 *Clinical-Pathological Conference* ..... General Lecture Hall
Subject: Uterine Bleeding
Presentation of Cases—John L. McKelvey, Minneapolis
Differential Diagnoses—Erle Henriksen, Associate Professor of Gynecology and Consulting Pathologist, University of Southern California, Los Angeles

10:15 *Intermission*

Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

11:00 *Arthur H. Sanford Lecture in Pathology* ..... General Lecture Hall
Subject: Rheumatic and Bacterial Endocarditis—Benjamin J. Clawson, Minneapolis
Presentation of Speaker: A. H. Baggenstoss, Rochester, President, Minnesota Society of Clinical Pathologists

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration ..... Spanish Room, Hotel Radisson
(Luncheon Meeting)
John E. Faber, Rochester

12:15 Round Table Luncheons ..... Hotel Radisson
(Listed under Section II, Special Session)

1:00 Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

2:00 *Public Health Meeting:* An Unfinished Job ..... General Lecture Hall
Chairman: A. E. Cardle, Minneapolis, President, Minnesota State Medical Association
Our Part in These Times—John O. Christianson, D.Sc., Superintendent, University of Minnesota School of Agriculture, St. Paul
The First Line of Defense—Lloyd E. Harris, Rochester
National Health Legislation—Senator Joseph H. Ball, Washington, D. C.
Budgeting for Health Care—Robert L. Novy, President, Michigan Medical Service, Inc., Detroit
Teamwork in the Conservation of Human Resources—Morris Fishbein, Editor, *Journal of the American Medical Association,* Chicago

Wednesday, June 9

Section II—Special Session

A.M.

11:00 *Minnesota Heart Association* ..... Lecture Hall, Mezzanine Floor
Chairman: Paul F. Dwan, Minneapolis, President, Minnesota Heart Association

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration.....Spanish Room, Hotel Radisson
(Luncheon Meeting)
John E. Faber, Rochester

12:15 Round Table Luncheons.....Hotel Radisson
Lobotomy—Wallace P. Ritchie, St. Paul
Liver Function Tests—Herman J. Wolff, St. Paul
Pelvic Pain—Erle Henriksen, Los Angeles
Office Procedures in Rectal Diseases—Walter A. Fansler, Minneapolis
Newer Drugs—Raymond N. Bieter, Minneapolis
Common Urinary Problems—John L. Emmett, Rochester
Eye Ground Findings in Everyday Practice—Virgil J. Schwartz, Minneapolis
Facts and Fallacies Concerning the Thymus Gland—George B. Logan, Rochester
Treatment of Heart Disease—Paul G. Boman, Duluth

1:00 Scientific Cinema .....West Corridor
Visit Scientific and Technical Exhibits

2:00 Public Health Meeting: AN UNFINISHED JOB.....General Lecture Hall
(Listed under Section I—General Session)
A special health conference entitled "An Unfinished Job" will conclude the convention program. Invited to hear distinguished guest speakers discuss health problems, showing medicine's responsibility and the interplay of other factors influencing health and welfare, will be members of allied health organizations, social welfare workers, school and government authorities and representatives from the co-operative, farm, labor, professional and civic groups.

SCIENTIFIC EXHIBITS

S-12 *American Association of Medical Social Workers, Minnesota District*

S-20 *American Cancer Society, Minnesota Division*

S-17 *"American Red Cross Blood Program"*
American National Red Cross

S-14 *"Blue Shield"*
Minnesota Medical Service, Inc.

S-6 *"Bronchospirometry and Its Clinical Application"*
Lowell J. Peterson, H. S. Wells and N. K. Jensen,
Veterans Hospital and University of Minnesota

S-29 *"Cardiovascular Disease—Recent Studies"*
Minnesota Heart Association
Motion Picture Demonstrations of the Action of the Cardiac Valves—H. E. Essex, Ph.D., H. L. Smith and E. J. Baldes, Ph.D.
Developmental Basis for (1) Persistent Truncus Arteriosus, (2) Complete Transposition and (3) Tetralogy of Fallot—J. E. Edwards and A. H. Bulbulian, D.D.S.
Motion Picture Demonstration of Continuous Sampling of Intra-Arterial Blood—E. H. Wood, G. E. Montgomery, Jr. and J. E. Jerasi
Coarctation of the Aorta: Surgical Treatment by Excision of the Stricture and End-to-End Anastomosis of the Aorta—O. T. Clagett.
Ultra High-Speed Motion Picture Studies of Cardiac Contraction—William Hunt, Carney Landis, Gordon Moe and Maurice B. Visscher
Anomalies of the Aortic Arch and Its Branches (Cabinet Exhibit)—J. E. Edwards
Congenital Anomalies of the Heart and Great Vessels: Clinical and Pathological Study of 115 Cases (Cabinet Exhibit)—J. E. Edwards, R. L. Parker, H. M. Rogers, A. H. Bulbulian, D.D.S., T. J. Dry and H. B. Burchell

S-1 & 2 *"Clinical Cancer Activities of the University of Minnesota"*
Arnold J. Kremen, Wilhelm Stenstrom, David State, George Moore and Robert Huseby

S-25 *"Clinical Science Exhibit"*
William H. Crawford, D.D.S., Dean
School of Dentistry, University of Minnesota

S-4 *"Congenital Displacement of the Hip Joint—Recognition and Treatment During Infancy —Before Weight Bearing"*
Vernon L. Hart, Wesley H. Burnham and Stuart L. Arey, Minneapolis

S-16 *"Diagnostic Aids and Management of Bulbar Poliomyelitis"*
National Foundation for Infantile Paralysis

S-7 *"Endocrine Products: Actions and Uses"*
American Medical Association

S-28 *"Factors in Cardiovascular Degeneration"*
Ancel Keys, Carlton Chapman, Austin Henschel, Joseph Brozek, Olaf Mickelson, Ernest Simonson and Henry L. Taylor,
Laboratory of Physiological Hygiene, University of Minnesota

S-19 *"Glaucoma"*
Minnesota Society for the Prevention of Blindness

S-8 *"Hernia Repair" (McArthur-McVay-Bassini)*
Carl O. Rice, Minneapolis

S-30 *Mayo Foundation for Medical Education and Research and the Mayo Clinic*
"Carcinoma of Larynx, Methods of Treatment and Results"
G. B. New, F. Z. Havens, F. A. Figi and J. B. Erich
"Surgical Treatment of Certain Types of Intrathoracic Lesions"
S. W. Harrington, H. K. Gray and O. T. Clagett

S-18 *Minnesota Department of Health*

S-15 *Minnesota Mental Hygiene Society, Inc.*

S-14 *Minnesota Society for Crippled Children*
Activities of the Society

S-21 *Minnesota State Medical Association Committee on Tuberculosis*

S-10 *Minnesota State Pharmaceutical Association*

S-13 *Minnesota Tuberculosis and Health Association*

S-23 *"Multiple Polyposis of the Colon"*
Arthur W. Ide, Veterans Hospital, Minneapolis

S-3 *"Physical Medicine in Acute Poliomyelitis"*
Miland E. Knapp and Myron D. Lecklitner,
Sheltering Arms Hospital, Minneapolis

S-27 *"Peripheral Vascular Diseases"*
Wayne Hagen, C. D. Adkins, H. A. Alexander and H. O. McPheeters, Minneapolis

S-11 *"Recruitment of Student Nurses"*
Minnesota Nurses' Association

S-22 *"The Rehabilitation of the Neurologic Patient"*
Departments of Neurology and Physical Medicine Rehabilitation
Veterans Hospital, Minneapolis

S-5 *"Report on a Simple Method of X-Ray Pelvimetry and Evaluation of Seventy Cases"*
Staff, Maternity Hospital, Minneapolis

S-24 *"Right Heart Catheterization"*
Richard V. Ebert, Craig Borden, H. S. Wells and Russell Wilson,
Veterans Hospital, Minneapolis

S-9 *"What Is Industrial Medicine"*
Leonard Arling
Northwest Industrial Clinic, Minneapolis

110 *Woman's Auxiliary to the Minnesota State Medical Association*

Minneapolis Surgical Society

Meeting of January 8, 1948

Dr. L. Haynes Fowler, Presiding

CARCINOMA OF THE GALL BLADDER

An Analysis of 70 Cases

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This study was made by checking records in four institutions: thirty cases from the University of Minnesota Hospitals, twenty from the Minneapolis General Hospital, twelve from Northwestern Hospital, and eight from St. Barnabas Hospital, all of Minneapolis. All of the cases included in this study were proven by operation or autopsy. No case was included where the information was inadequate or the diagnosis questionable. Only cases from the past decade, from 1937, were included in this study.

Incidence

The exact incidence of carcinoma of the gall bladder is somewhat difficult to determine. Some authors have given it fifth place in frequency of cancer among the organs of digestion. The order is as follows: (1) stomach, (2) colon and cecum, (3) rectum, (4) esophagus, (5) gall bladder and ducts.[11] Carcinoma of the gall bladder has a tendency to occur more frequently in women than in men. It has been estimated to account for between 8 and 10 per cent of all cancer in women. A study of autopsy records at the department of pathology at the University of Minnesota, for the period 1937 through 1946, shows that out of 25,283 consecutive autopsies, carcinoma of the gall bladder was listed as the cause of death eighty-four times, an incidence of 0.33 per cent. This figure corresponds with other reports in the literature.

Age and Sex

The incidence of carcinoma of the gall bladder is considerably higher in women than in men. The greater incidence in women is thought by many to result from the greater preponderance of gallstones in females. In this series, the disease was found in forty-seven females and twenty-three males—the ratio being a little more than two to one. The usual ratio is given as three women to one man.

Carcinoma of the gall bladder is definitely a disease of the so-called "cancer age." It almost always occurs in a patient over forty years of age. The average age in various reported series ranges from fifty-seven to sixty-five. The youngest patient reported was a man twenty-two years of age, while the oldest was a woman of ninety-three. All patients in this series were over forty. The youngest was forty-three and the oldest eighty-three. The average age for this series is sixty-two years.

TABLE I. AGE AND SEX

Age	Male	Per cent	Female	Per cent	Total	Per cent
41-50	4	5.7	3	4.2	7	10
51-60	6	8.5	14	20.0	20	28.5
61-70	8	11.4	17	24.2	25	35.7
71-80	4	5.7	12	17.1	16	22.8
81	1	1.4	1	1.4	2	2.8
Total	23	32.8	47	67.2	70	100.0

Symptomatology

The symptoms associated with carcinoma of the gall bladder are variable, depending on the location and extent of spread of the lesion. The most common symptoms in the order named are: pain, weight loss, weakness, anorexia, nausea, vomiting, jaundice, and the presence of a mass. Other symptoms seen less frequently are diarrhea, constipation, bloating or belching, chills and fever, and tarry stools.

The duration of the symptoms varies greatly. Most of the patients in this series had complaints of more than one month duration, but less than six months. A number of patients seemed to be acutely ill at the onset, their symptoms being present only for a few days or weeks. Several patients never had any acute symptoms whatever, but complained of vague abdominal distress for several years. Many had a history of acute biliary colic many years previously, with or without jaundice, which cleared up spontaneously and never reoccurred. Three of the patients in this series had previous gallbladder operations; two had their gall bladders removed, and one had a drainage with removal of stones. One patient had an incision of a subdiaphragmatic abscess, which subsequently developed a biliary fistula.

TABLE II. DURATION OF SYMPTOMS

Under 1 month	14
1-6 months	34
6 months to 1 year	12
To 5 years	10

Where a careful history had been taken, some interesting facts were elicited. Very often, where the acute symptoms had been present for a relatively short time, it was revealed, on close questioning, that the patient had had digestive disturbances over a period of many years. Food intolerances were noted in many instances.

Inaugural thesis.

Constipation with the use of cathartics was common. A number of patients had sought medical advice for their discomfort. Some had been given medications without adequate examination to determine the cause of their trouble. Others had had extensive studies, including laboratory and x-ray. Of these, several had had definite diagnoses made of gall-bladder disease, including the presence of gallstones. Some had been advised to have an operation performed, but had refused. In such cases it is interesting to speculate whether or not such an unfortunate development as carcinoma of the gall bladder would have occurred if the patients had heeded the advice given them.

Pain was the most frequent complaint. It was present in 85 per cent of the cases in this series. It is located in the right upper quadrant and the epigastrium. Once the pain has become noticeable, it is usually constant, dull, and persistent. It is often described as a burning sensation, fairly definitely localized and usually not radiating. It is quite distinct from the pain of biliary colic, although colic was present in some of these patients.

Jaundice was seen in thirty-four of the patients in this series, an incidence of forty-eight per cent. Once jaundice has developed, it is usually continuous. Clay-colored stools and dark urine have usually been noted by the patient even before the jaundice has become pronounced. Pruritus was a common accompaniment, and was very distressing in several of the cases. The icteric index rises rapidly, very commonly over 100 and much higher in some instances.

Weight loss was a common complaint. It was present in 64 per cent of the cases in this study. Weight loss, weakness and anorexia are present in nearly all cases of cancer. In this series, weight loss was a prominent feature and was the first symptom in some instances. The weight loss was more profound where the gastro-intestinal disturbance was severe. The average weight loss where this symptom was mentioned was 26.3 pounds. One man, who had a large mass present, lost 60 pounds in a period of four months.

A palpable *mass* was found to be present in thirty-four cases (48 per cent). It was usually firm and tender and sometimes attained considerable size. The liver edge could be palpated in nearly half of the cases. It was felt in all those with jaundice, and in some cases definite nodules could be palpated. The nodules were present in the advanced cases and probably represented metastases.

Anemia was not a prominent finding in this series. The average hemoglobin was 76 per cent. One hemoglobin was reported as 36 per cent—this in a patient who had bleeding into the bowel, as evidenced by tarry stools. The autopsy showed the carcinoma had perforated the duodenum. One patient had a hemoglobin of 107 per cent. This was probably due to dehydration from vomiting.

Causative Role of Gallstones

As with carcinoma elsewhere, the specific etiological factors in carcinoma of the gall bladder are not known. The relationship between carcinoma of the gall bladder and gallstones must be considered to be very important. In various reported series, the majority of cases show that stones have antedated the development of the malignancy. There is, in all probability, an irritation produced by the calculi which influences the production of the neoplasm.[9] It is obvious that cholelithiasis is not the only and direct cause of the carcinoma, for we see many patients with gallstones and inflammation of the gall bladder of many years' standing who do not develop malignancy. The role of stones as an exciting factor seems definite. The incidence of cases of cholelithiasis in which carcinoma finally developed has been estimated variously from 1.14 to 15 per cent.[11]

TABLE III. INCIDENCE OF GALLSTONES IN 70 CASES OF CACRINOMA OF THE GALL BLADDER

	Stones Present			*Stones Absent*		
	Number	Per cent	Average Age	Number	Per cent	Average Age
Males	8	12	64	15	21.5	59
Females	32	45	65	15	21.5	61
Total	40	57	64.5	30	43	60

In this group of cases, stones were definitely demonstrated in only 57 per cent of the cases. However, it should be remembered that many of these patients had the diagnosis made at operation where an extensive exploration was not done. It is the belief of this writer that this figure would be much higher if all of the cases reported were the result of autopsy findings. Where inoperable carcinoma was found, the incision was closed in many instances with no attempt being made to determine the presence or absence of stones.

If we consider only the autopsy reports, our figures are much different. It is admitted that surgical statistics are misleading, for, as stated, inoperable malignancies cannot be satisfactorily explored. In this series thirty-eight patients came to autopsy. Cholelithiasis was reported in thirty-one of the thirty-eight. Thus, stones were present in 81.3 per cent of the autopsied cases. This figure corresponds to those reported in the literature.[11]

Experimental studies on gall bladders of laboratory animals, in an attempt to produce carcinoma by the introduction of foreign bodies, have been undertaken by several authors. The results have, in the main, been inconclusive. Petrov and Krotkina were able to demonstrate carcinoma in five out of 100 guinea pigs after the introduction of sterile, hard, foreign bodies (which act like gallstones in the human).[12] This would lead us to agree with Graham, who advocates prophylactic removal of gall bladders for gallstones, even though they be of the so-called "silent" variety.[7]

Pathology

In most of the patients operated on, the presence of malignancy was determined readily by gross examination. In only two cases was a gall bladder removed for chronic cholecystitis and cholelithiasis, to have the diagnosis of carcinoma made by microscopic examination. It is a tribute to the diagnostic ability of the clinicians that

the true condition was suspected in all of the remaining cases.

In most instances the gall bladder was found to be enlarged, thick-walled, shaggy, and to contain thick bile. In several there was direct extention to the liver bed. In two cases, there were biliary fistulas. One patient had a perforation into the duodenum. Four had obstruction of the duodenum. Forty-two had metastases to the liver and/or nodes. The majority of the cancers were of the adenocarcinoma type, where the type was stated. Three scirrhous and two squamous cell carcinomas were reported.

No attempt was made to classify the type of carcinoma according to Broder's method. This might have been useful, as some surgeons are able to estimate the probability of metastases and the relative length of life of the patient following surgery. In some instances it may have been of value in determining the type of operation to be performed.

Diagnosis

The difficulty of establishing a diagnosis of carcinoma of the gall bladder preoperatively is readily apparent. Except when advanced, the clinical picture is one of benign biliary disease. A typical instance could be summarized as follows:

A woman, aged 60, with a past history of epigastric distress, begins to notice continuous pain in the right upper quadrant. There is belching, regurgitation, fullness associated with anorexia, and weakness. There may have been a few attacks of biliary colic, and there may be weight loss, nausea, vomiting, and possibly jaundice. The onset is indefinite and insidious. The fact that the jaundice is associated with pain does not rule out malignancy. The jaundice in malignancy does not usually come on suddenly, as is true with that seen where there is blockage from a stone. The presence of a mass must be regarded as a late sign.

Laboratory work and x-rays are of little help in establishing a diagnosis. Many of the cases in this series had very extensive laboratory studies. Also they had the benefit of competent medical consultations. It is fair to state that in no case was an early diagnosis made which could have led to an earlier operation, thus making it possible to eliminate the cancer before an extensive spread had taken place. It is an accident when a carcinomatous gall bladder is removed prior to its involving the liver or ducts.

The icteric index or serum bilirubin determinations were made in practically all patients in this series who had jaundice. They were, of course, found to be elevated, but the results give no information as to the presence of carcinoma. Many patients had extensive liver function tests, but here again the findings gave only a clue as to the presence of liver damage and no specific information of the cause of the trouble could be obtained. Practically all other laboratory tests gave similar lack of helpful evidence. The majority of patients had preoperative x-ray studies—some very extensive. Here, again, the results were disappointing and the findings were of little aid. Several patients had gall-bladder studies reported as entirely normal. Several patients had nonfunctioning gall bladders, and stones were demonstrated in a few. In no case, however, was the roentgenogram an aid in determining the nature of the disease. Gastrointestinal x-rays were made in many cases, and were not of any particular help.

Surgery

The type of operation selected in cases where a carcinomatous process involves the gall bladder depends on the individual case. As has been stated, most of the cases in this series were inoperable and only exploration and biopsy were carried out. The operation may be palliative, or, if the condition permits, a radical attempt may be made to extirpate the neoplasm. The palliative procedure may concern itself with an attempt to reestablish the normal flow of bile where an obstruction exists. This, at best, is only a temporary expedient, but it will serve to clear up jaundice and relieve the patient of troublesome pruritus. If the normal flow of bile cannot be restored, then a cholecystostomy may be done. Various types of anastomoses have been attempted where the common duct was involved. These include cholecystogastrostomy, cholecystoduodenostomy, and cholecystojejunostomy. If the situation lends itself to reconstruction of the bile ducts, some such method as that advocated by Cole,[3] with the use of vitallium tubes, or the method devised by Allen, with anastomosis of the proximal duct to the jejunum,[2] may be used.

No radical procedures were performed on the patients operated on in this series. Different types of operations have been described, and might be useful in selected cases. These operations appear to be most formidable. In most cases it would involve the resection of a portion of the liver, as the carcinoma usually invades the liver early in the disease, spreading by direct extension. It must be admitted that extensive involvement of the liver and bile passages with carcinoma is one of the most hopeless situations confronting a surgeon. Brunschwig and Bigelow have advocated excision of the gall bladder and ducts.[1] Payne has reported cases where a portion of the liver has been resected. Some modification of a Whipple operation has been attempted. At the present writing, these procedures have not given any great hope. It is really questionable whether the average length of survival of the patients subjected to these operations is any better than those who have received nonoperative treatment only.

Summary

Seventy cases of carcinoma of the gall bladder are presented. Twenty-three were in men and forty-seven were in women. The average age was sixty-two years.

The clinical picture was not well defined but resembled that of benign biliary disease in the early stages.

Of the seventy patients there were forty-five who had operations performed and thirty-eight came to autopsy. The incidence of calculi in the entire group was 57 per cent while the percentage was 81.3 in the autopsy group.

Operative procedures may be palliative or radical. It is doubtful whether the radical procedures are justified except in highly selected early cases. In view of the difficulty of diagnosis good results can rarely be expected.

The prognosis of carcinoma of the gall bladder is poor. Inasmuch as the incidence of malignancy is between 4

and 5 per cent of calculous gall bladders, the only hope for reduction of the general incidence lies in early removal of calculous gall bladders. This procedure is justified because modern surgical methods have reduced the operative mortality for cholecystectomy to less than 1 per cent.

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Discussion

DR. HAMLIN MATTSON: Dr. Benjamin should be commended for this study of carcinoma of the gall bladder in this area for a ten-year period. A few years ago I made a similar study and know the amount of work which is involved. Mine was largely necropsy data. The earlier surgeons found carcinoma of the gall bladder more than we do. The literature is replete with pathologic and necropsy studies but contains little on early diagnosis and surgical treatment. Perhaps the best surgical treatment is indicated by the fact that in the earlier years when the gallstones were permitted to battle it out with the body, there was a greater instance of carcinoma. Therefore the best treatment is removal of the calculous gall bladder whenever possible. The person who has a cholecystectomy because of stones and in whom an early cancer of the gall bladder is found is fortunate indeed.

When carcinoma is confined to the gall bladder itself, cholecystectomy and removal of adjacent liver tissue is advisable. In advanced cases, peritoneoscopy rather than laparotomy seems indicated.

A study of this type is beneficial, in that it reminds us that there is no such thing as an innocent gallstone.

DR. A. A. ZIEROLD: My experience with carcinoma of the gall bladder has been a small one. Within the past ten years the incidence of carcinoma of the gall bladder was no more than a fraction of 1 per cent in the cases of gall-bladder disease in which I have operated. I don't believe that the average individual sees a sufficient number of such cases to give him a background for very extensive comment. Such collections as these, and as Doctor Mattson related, will indicate some trends. I believe that we can say that it is probable that the presence of stone in the gall bladder does have something to do with the incidence of carcinoma, but I believe that the incidence is so low that the evidence merely indicates a trend.

I believe there is one thing that has not been emphasized in the series of Doctor Benjamin, and that is—early and late the picture of carcinoma involving the biliary tract is the picture of carcinoma elsewhere. Anorexia and weight loss are outstanding and without apparent cause. Remedial surgery appears to be beyond us at this particular time. Palliative surgery, except in a few cases, also is a thankless undertaking. In the individual who is so far advanced in his disease as to make survival questionable, little or no damage may be done by exploratory examination, but some damage may be done by peritoneoscopy. In my hands, this procedure is of limited diagnostic value.

I think Doctor Benjamin should be congratulated on this paper. It represents a great deal of work, unavoidable drudgery, and considerable interest to carry it through as completely and logically as he has done.

THE ROLE OF NARCOTICS (MORPHINE) IN POSTOPERATIVE MORBIDITY

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In addition to analgesia, narcotics have many other physiologic effects which have, individually, been the subject of numerous laboratory and clinical investigations. Knowledge of their total influence on postoperative morbidity has been mainly speculative. The relief of pain is essential, yet other concomitant physiologic actions of narcotics, such as depression of cough, smooth muscle spasm, et cetera, may initiate a chain of events cumulating in a detrimental result. It is the purpose of this study to evaluate the benefits and the disadvantages of the postoperative use of narcotics by an analysis of postoperative morbidity. Morphine and codeine were used almost exclusively. In occasional instances where other analgesics were used they were given a proportionate value and added to morphine in computing total dose.

Method of Investigation

Three hundred and sixty-eight cases of uncomplicated intra-abdominal operations were selected, first by running a series with morphine, then one without. In four instances, cases begun in the no-morphine series did receive morphine in their postoperative course to relieve pain. These cases were left in the no-morphine group to avoid transferring their complications, possibly associated with pain, into the narcotic group. Those cases receiving no narcotics were given a barbiturate and atropine as preoperative medication and intravenous alcohol, 6 per cent, for postoperative analgesia. In occasional instances 1.0 gm. of sodium salicylate was given intravenously as a supplement to the alcohol, based on the evidence of synergism of the two drugs as noted by Wolff and Hardy.[22]

In order to obtain uniformity as to type of cases and thereby avoid the pitfalls of too many variables, and still not extend the study over too long a time, it was decided to make observations on intra-abdominal surgical cases. This series was further simplified by the exclusion of pediatric patients, patients with suppuration noted preoperatively or at operation, and cases involving bowel resection. When nasal suction or an inlying urinary catheter was used prophylactically, the case was not included, since certain complications thereby would have been averted. Antibiotics were used only for treatment of complications. All patients received inhalation anesthesia.

Table I lists the distribution of cases as to type of surgical procedure. A separate listing was kept of all

This study was conducted at the St. Barnabas Hospital as part of the training program for surgical residents.

the patients operated upon by one surgeon (Dr. X) so that variation of technique and postoperative management might be ruled out in a comparison of his group to the total series. These graphic comparisons (Figs. 5, 7, 9 and 11) in the series of Dr. X indicate a similar trend with the over-all series, with differences persisting from day to day, which in itself bears considerable significance. Had there been a larger series of cases, the significant difference probably would have been more evident.

For further analysis of the data, an arbitrary line was established to obtain comparison between high and low doses of morphine as well as none and any. One-half grain of morphine or a comparable dose of codeine, et cetera, was selected as the division, above which the dose was considered high.

Since actual diagnosis of complicating disease, such as atelectasis, pneumonia, pulmonary infarct, phlebothrombosis, et cetera, often is equivocal, and the incidence of the occurrence of a full-blown case is so infrequent, it was decided to pay more attention to the more frequenttly occurring and more easily observed signs and symptoms. Fever, cough, gas pains, vomiting, urinary retention, diarrhea, and chest pain all indicate bodily disorder and are either the signs of, or the precursors to, the more serious postoperative complications.

Of the 368 cases, 277 were given morphine as required for relief of pain as preoperative medication, or as a routine medication every four hours after operation. Ninety-one patients received no morphine at all. In the series of 141 cases of Dr. X, ninety received morphine and fifty-one got none. To evaluate the differences between these groups and to place proper weight or balance with groups of different sizes, statistical methods were employed. For assay of the percentile observations, the Edgerton-Patterson frequency distribution chart was used, and a difference of 2.5 standard deviations, i.e., critical ratio, was considered significant. In evaluating the differences of mean daily temperatures (Figs. 7 and 8), the formlas

$$K = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{Sx^2}{Nx} + \frac{Sy^2}{Ny}}} \qquad \text{and} \qquad Sx^2 = \frac{\Sigma x^2}{N} - \bar{x}^2$$

were used. K of greater than 1.96 was taken to be significant.

Graphs of the mean percentage incidence of cough, gas pains, catheterization for urinary retention, and emesis were plotted for the day of surgery and the following ten postoperative days. The statistical significance of the differences on each day was computed. The graphs are self-explanatory, but attention should be called to the days on which a significant difference occurred between the morphine and no-morphine curves.

TABLE I. COMPOSITE PICTURE OF 368 CASES

Divided into three series—all cases, those receiving narcotics (high-low dose) and those of Dr. X. The comparative incidence of complications can be noted.

	All Cases—368						
	Inactive Appendix	Acute Appendix	Gynecology Cases	Chole-cystectomy	Hernior-rhaphy	Miscel-laneous	Totals
None	13	22	23	10	19	4	91
Low	20	25	30	11	21	4	111
High	24	26	55	29	21	11	166
Total	57	73	108	50	61	19	368
	Cases of Dr. X—141						
None	13	21	23	10	19	4	90
Any	6	12	12	11	8	2	51
Total	19	33	35	21	27	6	141

Since an elevated temperature is indicative of bodily disorder of many possible sources, a difference in this sign should be important. Differences in mean peak daily temperatures are represented graphically in Figures 1 and 2, Figure 1 being the difference between none and any morphine and Figure 2 between high, low, and no doses. Statistical evaluation of differences on each individual day failed to exceed the critical ratio, but the persistence of even small differences, when repeated consecutively, gains considerable significance. A definite difference persists between the first and sixth postoperative days.

A scatter graph (Fig. 3) was compiled to demonstrate possible relationship of total dose of narcotic to days of fever, i.e., postoperative days until temperature remained at 99° or less. It is noted that there is roughly a distribution upward and to the right, indicating some correlation between higher total dosage and days of fever. It is possible, however, that an unsound conclusion might be drawn from this, since patients with complications probably required more prolonged analgesia. It is presented only as another view of the data for whatever it may be worth.

Results of the Study

Table II represents a listing of complicating symptoms, signs and diseases as a composite picture of the entire hospital course. The morphine group had 1.7 days more of fever, 0.51° higher than mean peak temperatures, et cetera. The line indicating average number of times or days of catheterization, cough, et cetera, takes into account the severity and duration of the complication, whereas percentage incidence accounts only for the number or percentage of patients exhibiting the symptom. The complicating diseases listed, such as pulmon-

ary embolism, atelectasis, et cetera, did not occur frequently enough in either group to be of true statistical significance. However, the difference in percentage of occurrence of sharp chest pain, 11.8 per cent to 5.7 per cent, and of diarrhea, 7.2 per cent to 1.1 per cent, is significant. A comparison of the column of cases of Dr. X to that of the total group is again quite parallel.

TABLE II. DISTRIBUTION OF ALL CASES AS TO TYPE OF SURGICAL PROCEDURE

		All Cases—368		Any Narcotics—277		Dr. X—141	
		No Narcotics 91	Any Narcotics 277	High Dose 166	Low Dose 111	No Narcotics 90	Any Narcotics 51
Days of Fever (Till Temp. 99° or Less)		3.29	4.99	5.54	4.16	3.28	5.00
Peak Temp. (Avg.)		100.08	100.59	100.66	100.48	100.07	100.77
Catheterization	Avg. No. Times	.59	.94	1.08	.73	.59	.98
	% Incidence	21.6	36.4	38.3	33.7	21.6	40.7
Gas Pains	Avg. No. Days	.65	1.36	1.66	.90	.65	1.26
	% Incidence	36.4	60.7	68.9	48.7	36.4	57.5
Cough	Avg. No. Days	.35	1.27	1.46	1.0	.35	1.04
	% Incidence	13.6	21.4	20.4	23.0	13.6	27.8
Emesis	Avg. No. Times	.86	1.01	1.14	.82	.86	.87
	% Incidence	37.5	45.3	49.7	38.9	37.5	37.0
Sharp Chest Pain—%		5.7	11.8			5.7	7.4
Pulmonary Emboli—% (Proved)		0	.4			0	0
Atelectasis or Pneumonia—%		0	4.3			0	3.7
Thrombophlebitis or Phlebothrombosis—%		0	1.1			0	0
Wound Infection—%		0	3.9			0	5.1
Wound Disruption without Infection—%		1.1	4.6			1.1	1.8
Evisceration—%		0	0.4			0	0
Ileus Requiring Suction—%		0	2.8			0	1.8
Diarrhea—%		1.1	7.2			1.1	11.1

None signifies that no narcotic was used. *Low* indicates that a total of ½ grain of morphine, or less, was given throughout the period ofobservation. *High* indicates that more than ½ grain of morphine or comparable dose of codeine was used.

As initially stated, it is not the purpose of this study to determine the causes of the differences observed, but some speculations may be in order based on our knowledge of the pharmacological action of morphine and its derivatives. A review of the literature regarding the observations of other investigators also serves as a basis for such speculations.

Incidence of Cough

The symptom cough attracts particular notice since it exhibits the greatest significant difference between the two groups. There is a greater than 2.5 standard deviation difference from the second through the tenth postoperative day (Fig. 4). Figure 5 illustrates essentially the same findings in the cases of Dr. X. The fact that the statistical significance begins on the second postoperative day must be accounted for.

A possible explanation for this difference in the narcotic and no-narcotic groups may be that morphine suppresses the cough reflex, tends to bronchial muscle constriction,[2,12] diminishes respiratory minute volume, rate and tidal exchange,[9] reduces vital capacity,[8] and decreases the percentage of oxygen saturation of arterial blood.[6] Coughing directly postoperatively is of great value to rid the bronchi of secretions accumulated during anesthesia. The morphine group received the drug, on the average, for two and a half days, and cough did not appear as a significant feature until the second postoperative day. This could be interpreted as narcotic suppression of cough for the first few days, followed by coughing due to, by then, established pulmonary disease resulting from accumulated secretions held within the lungs for too long a time. This situation alone could account for the greater elevation of temperature in the narcotic group.

Incidence of Gas Pains

Gas pains were significantly different in the two series of cases on the first, second and third days (Fig. 6). Figure 7 illustrates essentially the same findings in the cases of Dr. X.

The difference in gas pains is probably related to the spastic influence of morphine on nearly all smooth muscle. Any conclusions regarding intestinal activity may be speculative, because experimental and clinical observations have been made in abnormal situations. Exteriorization of bowel segments, intubation and balloon studies and roentgenography have some unnatural sequalae. A balloon and tube is a foreign body and records only reaction in a particular location. Barium is, likewise, foreign to the bowel and has certain characteristics to which the bowel is not normally accustomed.[1]

Constipation is a well-known effect of morphine compounds. This is due, in part, to slow gastric emptying, pyloric and anal sphincter spasm[12,16] and in part also to dis-co-ordination of the peristaltic and mixing waves of the intestine as a whole.[11] Its effect might be comparable to a spastic constipation.

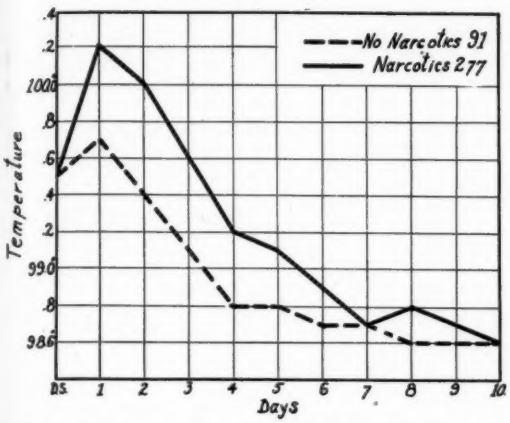

Fig. 1. There was no statistical significant difference in the temperature elevation in the two groups of cases, but the fact that the temperatures were slightly different from day to day lends significance in itself.

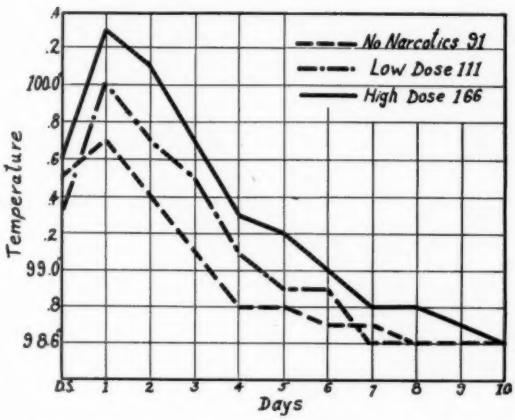

Fig. 2. Temperature difference in high, low and no narcotic series.

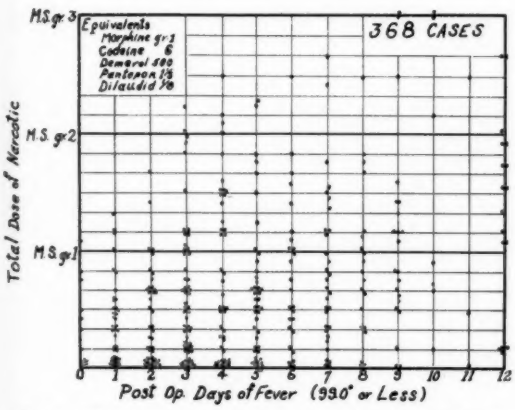

Fig. 3. The scatter graph illustrates a tendency to distribution upward and to the right, suggesting some correlation between a high dose of narcotics and the prolongation of fever.

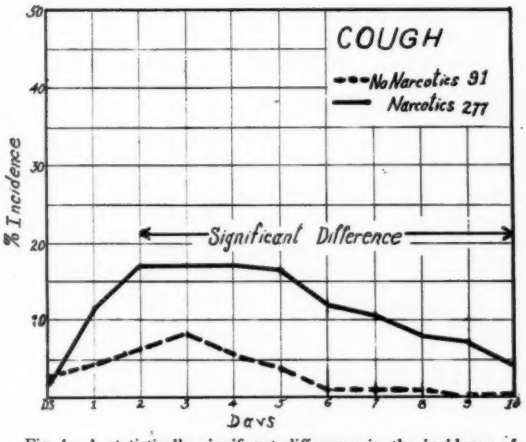

Fig. 4. A statistically significant difference in the incidence of cough with and without the use of morphine is observed from the second to the tenth postoperative day.

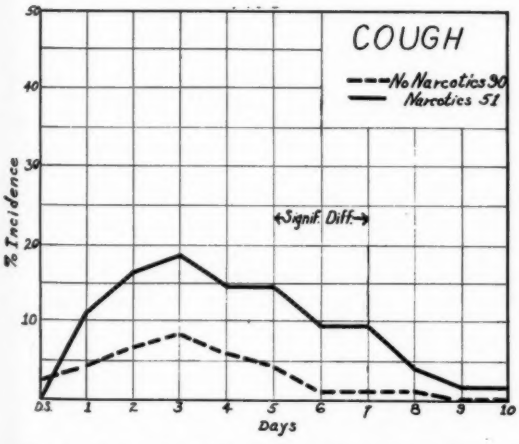

Fig. 5. Cases of Dr. X showing a similar curve to that observed in Figure 4.

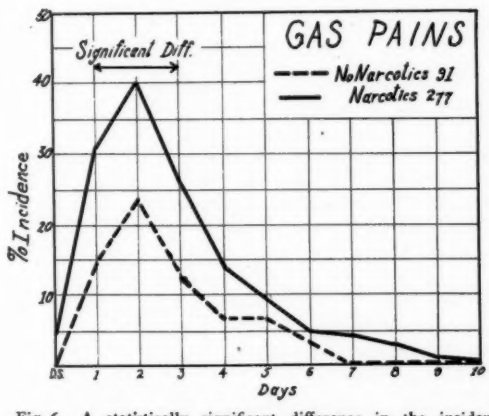

Fig. 6. A statistically significant difference in the incidence of gas pain colic was evident from the first to the third postoperative day.

Most investigators are in agreement that with the use of morphine there is an increased muscular tone in at least one or another of the phases of intestinal muscular activity.[1,2,10,11,12,13,15,18,21,24] Some authors believe that there may be enough spasmogenic effect of morphine on the intestine, at sites other than its sphincters, to produce areas of spasm.[13,18,24]

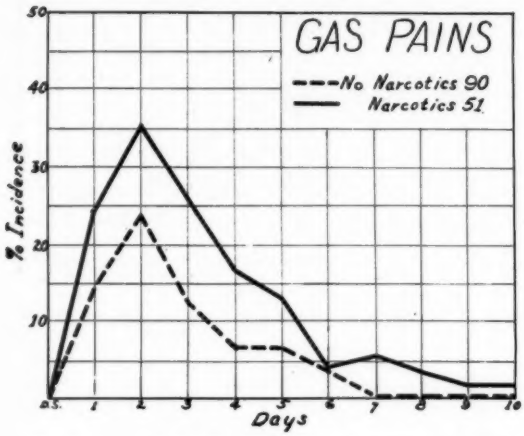

Fig. 7. Cases of Dr. X showing a similar curve to that in Figure 6.

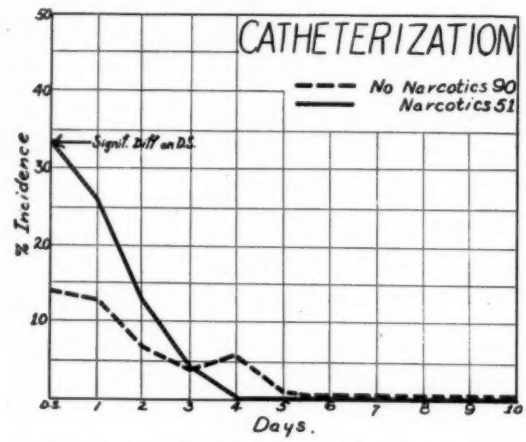

Fig. 9. Cases of Dr. X showing a similar curve to that in Figure 8.

If one carefully differentiates gas pain colic from paralytic ileus, or intestinal obstruction, some confusion is eliminated. In paralytic ileus there is distention without crampy pains, whereas gas pains distention presents an entirely different picture. There are numerous references in the literature which fail to define carefully such terms.[5] Gas pains resemble obstructive colic. In another study we have found x-ray evidence of distention proximal to an area of segmental spasm. We found such areas to be most commonly located at trigger zones in the colon, the hepatic and splenic flexures.

All the abnormal influences of morphine on the intestinal musculature may explain the difference in percentage incidence of gas pains between the two groups involved in this study. Other explanations may be equally or more reasonable. Finally, attention should be called to the fact that some observers believe that there

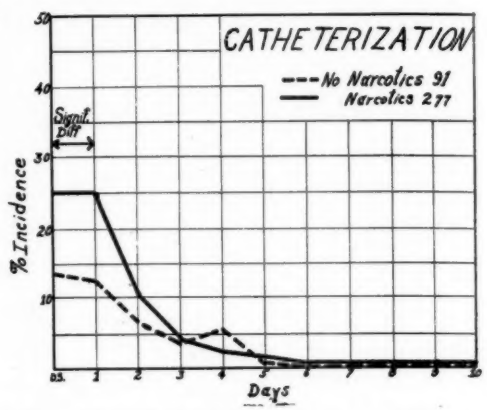

Fig. 8. The incidence of catheterization was significantly different only on the day of surgery.

is a variable effect depending upon the size of the dose,[13] and in all probability there are individual patient differences in sensitivity to the given dose. It is possible that even a single dose may set off the chain of events resulting in colic. The balance must be quite thin, for those receiving no morphine also had symptoms of gas pain, although not as many patients complained of this.

Incidence of Urinary Retention

The analysis of catheterizations indicates a statistically significant difference in the narcotic and no narcotic groups on the day of surgery and the first postoperative day (Figs. 8 and 9).

Urinary retention is most likely due to the spastic influence of morphine on the trigone musculature.[8,12] The morphine inhibition of water diuresis[8] may also play a part in the delay of urination.

Incidence of Emesis

The emetic property of opiate derivatives[12] on a sensitive individual is a well-known fact. In this study, emesis showed its greatest and only significant difference during the period of more frequent morphine administration, i.e., the day of surgery and first postoperative day (Figs. 10 and 11).

Other writers have noted other side effects of morphine which might affect the difference in morbidity found in this study. Hyperglycemia,[4] inactivation of cholinesterase,[23] decrease of prothrombin time,[14] as well as various cardiac, circulatory and metabolic changes,[7,20] have been observed and could influence postoperative morbidity.

To produce the true and complete relationship between the increased incidence of complications found by this clinical study and the pharmacological properties of morphine which might account for the increase, one must consider the factors common to both groups, name-

ly anesthesia, operation, and disease. The pharmacologic effects of morphine as related to these factors are likely quite different from normal or single factor situations.

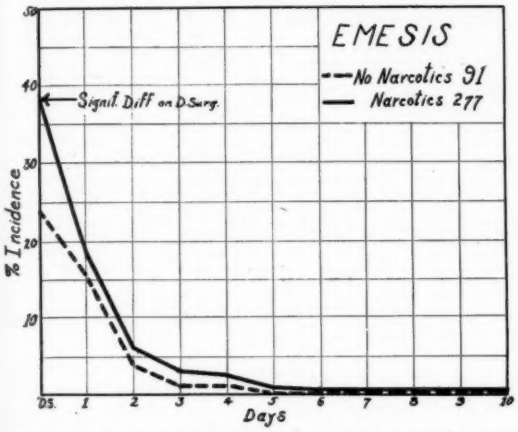

Fig. 10. Emesis occurred more frequently in the narcotic group only on the day of surgery. On that day a statistically significant difference appeared.

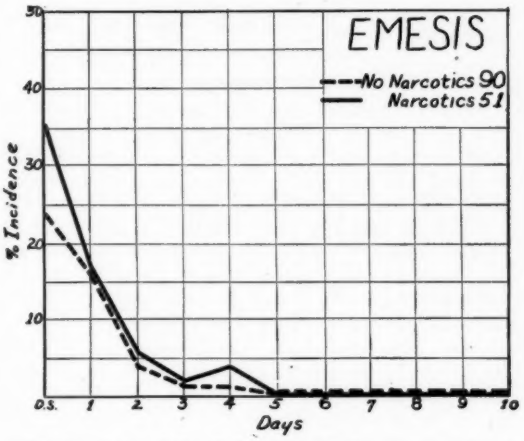

Fig. 11. Cases of Dr. X showing a similar curve to that in Figure 10.

Summary and Conclusions

A statistical evaluation of the influence of morphine on postoperative morbidity was made by comparing the incidence of complicating signs and symptoms between a group of ninety-one patients who received no morphine and a group of 277 patients who received varying doses of morphine.

A statistically significant difference was found in cough, gas pains, urinary retention, vomiting and fever in favor of the no-narcotic group.

The greatest difference was found to be cough, which was significant from the second through the tenth postoperative day.

The incidence of gas pain colic can be reduced by decreasing or eliminating the use of morphine.

Because of the undesirable side effects of narcotics, other methods or drugs for obtaining relief from pain must be searched for.

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PREOPERATIVE AND POSTOPERATIVE NUTRITIONAL REQUIREMENTS

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As one of the residents at the St. Barnabas hospital,

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I have been assigned a problem dealing with preoperative and postoperative nutritional requirements. Dr. Strickler has presented some comparative morbidity figures which he obtained at the St. Barnabas Hospital about a year ago. He has also mentioned some nitrogen balance studies which evolved from his work at that time. These I have inherited.

Caloric Requirements

We have continued these investigations on the premise that the problem of maintaining the caloric requirement in the preoperative and postoperative periods must be faced. Before this could be done, some conception of the caloric requirement of the patient seemed necessary.

The basal caloric requirement may be established in several ways. The DuBois Charts[6] are simplest and are adequate for ordinary clinical purposes. It will be recalled that with the height and weight of the individual, the square meters of surface area can be read directly from the chart. The required calories per square meter for various age groups are noted on other charts. Therefore, the determination of calories required per square meter for the normal individual is a simple procedure. It has been the experience of Boothby[2] and others that estimations of this nature are usually correct within 10 per cent.

A more accurate means of determining the caloric needs is to establish the oxygen utilization rate with the aid of the usual basal metabolic rate apparatus. With this method, the respiratory quotient is usually assumed to be approximately .84, or normal. This implies that the usual amount of each type of food is being burned. Then about .4825 would represent the required calories necessary to consume one liter of oxygen.

Even more precision may be obtained by calculating the nonprotein respiratory quotient. Then, with the Schuntz table, one can note both the exact caloric need and the quantitative analysis of the food types burned.[4] However, if one chooses to ignore this feature, the error in caloric determination is pointed out by Magnus-Levy to be not in excess of 3 per cent.[5]

For the purpose of these studies we have not routinely determined the respiratory quotient, though we did so in a few instances when alcohol was being used as the principal source of energy. Low respiratory quotients were found in such instances. High values were found when carbohydrate was the principal source of energy. We expect to investigate this aspect further and more accurately with the idea of establishing a quantitative utilization of alcohol.

We obtained a routine basal metabolic rate on the patient the morning after admission to the hospital. This method of determining the calories, for the sake of these investigative studies, should be more accurate than the estimations from the DuBois chart of normals and will automatically correct for any caloric changes due to illness. With the oxygen utilization rate known, the twenty-four-hour basal caloric requirements may be calculated:

$$\frac{(1440 \text{ minutes in 24 hours})}{T \text{ (time of this test)}} \times 4.825$$

(calories in 1 L. O_2) = Total 24-hour heat output.

TABLE I. CALCULATION OF THE CALORIC REQUIREMENT

Case	H. H.	E. J.	W. C.
Degrees Rise in Fever	1.4	1	3
Fever Requirement (8%/Deg.)	182	123	444
SDA (8%)	130	123	148
Bed Activity (30%)	490	463	556
*Basal Caloric Requirements	1635	1544	1853
TOTAL CALORIC REQUIREMENT	2427	2253	3001
*Metabolic Rate (check)	2416	2422	2925

For each degree rise in temperature, 8 per cent of the basal caloric requirements must be added. The specific dynamic action (S.D.A.) requires an additional 8 per cent of the basal calories. Bed activity has been found to require approximately 30 per cent of the basal calories. The basal caloric requirements can be calculated as indicated in the text, or actually determined on the Jones Metabolic Unit. The sum of these values represents the total caloric requirements of the individual. To determine whether or not this calculation is correct, a metabolic rate check made with the Jones Metabolic Unit can be done. In each of these cases it can be observed that the metabolic check has been accurate within 10 per cent.

*Determined on a Jones Metabolic Unit.

From this formula the daily metabolic requirements are calculated as indicated in Table I.

If the basal caloric requirement is assumed to be the same each day, then we attempt to add the other caloric requirements for the somewhat fluctuant state of the patient incident to his illness. The specific dynamic action requires an addition of between 6 to 8 per cent of the basal calories when mixed dietary elements are being utilized.[11]

The activity requirement is certainly variable, but in the usual hospital patient we have been using figures up to 30 per cent of the basal caloric requirements. This additional caloric requirement is approximately the amount of energy utilized in being sick in bed, receiving medications, enemas, intravenous infusions and so forth, as is required to attend a patient in the hospital. The use of a kymogram for more accurate determination is being considered.

The requirement which changes most from day to day is that of fever. This requirement has been established at between 5 to 10 per cent for each degree rise in fever. We have been using 8 per cent. The sum total of such requirements should be about equivalent to the caloric needs of the patient. As a check on our calculations it has been interesting to measure the speed with which a liter of oxygen is consumed during activity, the burning of food (i.e. while an intravenous infusion is running), and while the patient has a fever. Those that we have done in this fashion have agreed essentially with our predetermined calculations. Three cases are illustrated in Table I where it can be observed that our predetermined total requirements were similar to the Jones M.R. check.

In an effort to determine the effect of an operation upon the metabolic rate, we have conducted a few preliminary tests directly before and within a short time after surgery. In the few cases which we have investigated there seems to be very little difference. A hint of elevation is suggested, as indicated in Table II.

Utilization of Ethyl Alcohol for Caloric Value

Having determined the caloric requirement, the next problem is that of meeting it. It is not unusual to find a requirement of 3,000 calories, or in some instances even more. In the belief that the patients should not be deprived of these calories during illness, needed even more than in health, we have endeavored to provide them directly after an operation.

The usual routine postoperative care provides the surgical patient with clear liquids during the first twenty-four or forty-eight hours. In this there are no calories, no protein, no carbohydrates. In our patients, immediate postoperative parenteral nutrition is commenced. The full caloric, carbohydrate and nitrogen requirements are provided. As soon as the patient is able to consume food by mouth, the parenteral feedings are diminished, taking care to provide only that amount which cannot be consumed by mouth.

Since it seems rather well settled that ethyl alcohol can be utilized for energy and is high in caloric value, we have found it convenient to add it to our intravenous solutions.[12] The initial studies pertaining to the use of glucose, amino acids and alcohol, all in one solution, are to be published in a forthcoming issue of the *Journal-Lancet*.

There are various estimates as to the rate and amount of alcohol utilized by the body. According to the work of Mellanby, 10 cubic centimeters an hour is considered to be the rate of utilization.[9] Exceedingly small quantities are excreted in the urine, expired gases and other bodily secretions. This total is probably not more than 2 per cent but may increase if the dose is excessive. The established caloric value of alcohol is set at 5.6 calories per cubic centimeter as noted in Goodman and Gilman.[7]

Sixty cubic centimeters of alcohol per liter of solution has been selected for routine use in our patients. This provides 336 calories. This is added to a bottle of commercially prepared Aminosol with 5 per cent dextrose solution. This solution includes 50 grams of the essential amino acids, representing 200 calories, and 50 grams of dextrose, also representing 200 calories. The addition of alcohol provides, therefore, 736 calories per liter. Amigen has also been used, especially when sodium chloride is desired. It provides slightly less protein.

These solutions have been used in more than 400 patients without ill effect. When a greater caloric intake was desired, we have increased both the alcohol and the dextrose with no undesirable effects. Four hours is the usual time required for administration.

TABLE II. PREOPERATIVE AND POSTOPERATIVE BMR COMPARISONS

Patient	BMR (Preoperative)			BMR (Postoperative)		
	O_2 Rate (Min.)	Calories	Date	O_2 Rate (Min.)	Calories	Date
1. W. C.	3¾	1853	12- 3-47	3½	1986	1- 3-48
2. B. C.	4¼	1635	12- 4-47	4½	1544	12- 5-47* Sedated
3. E. M.	6⅜	1108	12- 8-47	5⅜	1255	12-10-47
4. B. G.	5	1390	12- 8-47	5	1390	12-11-47
5. M. K.	4⅛	1684	12-29-47	4⅛	1684	12-30-47
6. F. T.	5	1390	12-31-47	4½	1544	1- 2-48
7. G. M.	5	1390	1- 2-48	4	1738	1- 3-48** Nauseated, sedated

* Temperature 100.2°
** Temperature 99.8°

A vein in the forearm or leg is used in preference to the antecubital vein in order to eliminate fatigue incident to keeping the arm extended upon a board.

Blood alcohol levels have been determined during the course of administration, and an attempt has been made to correlate the clinical manifestations. We have observed these patients passing through several clinical phases as the rate of administration is increased. Mild sedation and mild analgesia are observed first. Then the patient passes into a state of restlessness, but as the rate of administration continues, and presumably as the concentration in the blood increases, a soporific effect is manifest. Blood alcohol levels have been obtained after the method of Bodansky and Cavett.[5] Ten miscellaneous patients receiving routine Aminosol, glucose and alcohol showed a similar graphic picture.

TABLE III. SCALE OF TOXIC SYMPTOMS WITH VARIOUS BLOOD ALCOHOL LEVELS (Modified from Miles[10])

Per Cent Alcohol in Blood	*Symptoms*
0.010	Head clearing. Freer breathing. Mild tingling.
0.020	Slight fulness and mild throbbing at back of head. Touch of dizziness. Fatigue relief. Tone of pleasantness.
0.030	Mild euphoria. No sense of worry.
0.040	Lots of energy for things he wants to do. Talks much and loudly. Hands tremble slightly. Clumsy. Not embarrassed. Glib and flippant remarks.
0.050	Normal inhibitions practically cut off. Long winded. Blunting of self-criticism.
0.070	Feelings of remoteness. Odd sensations on rubbing hands together or of touching of face. Rapid strong pulse and breathing. Amused at own clumsiness. Upsets chair on rising.
0.100	Staggers very perceptibly. Talks to himself. Difficulty clothing himself. Fumbling of keys. Feels drowsy, sings loudly.
0.200	Needs help to walk or undress. Easily angered. Shouts, groans, weeps by turns. Is nauseated. Poor control of urination.
0.300	In stuporous condition. Very heavy breathing. Sleeping and vomiting by turns. No comprehension of language. Strikes wildly at person trying to assist.
0.400	Deep anesthesia, may be fatal.

When the rate of alcohol administration was purposely maintained close to 15 cubic centimeters per hour:

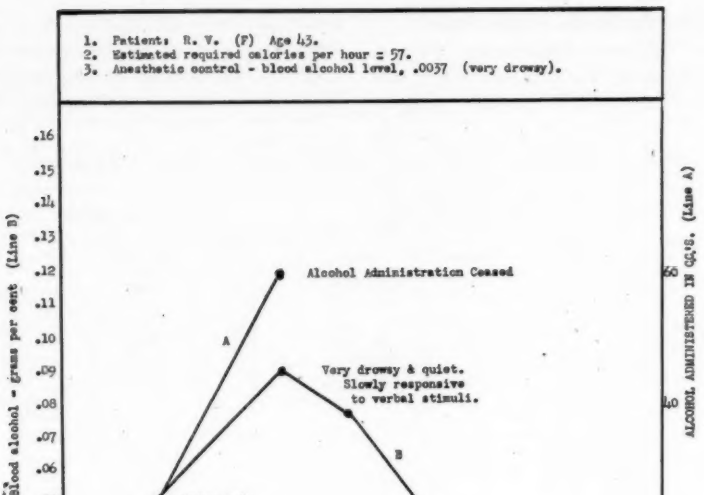

Fig. 1. The blood alcohol levels resulting from the administration of 60 c.c. of ethyl alchohol intravenously.

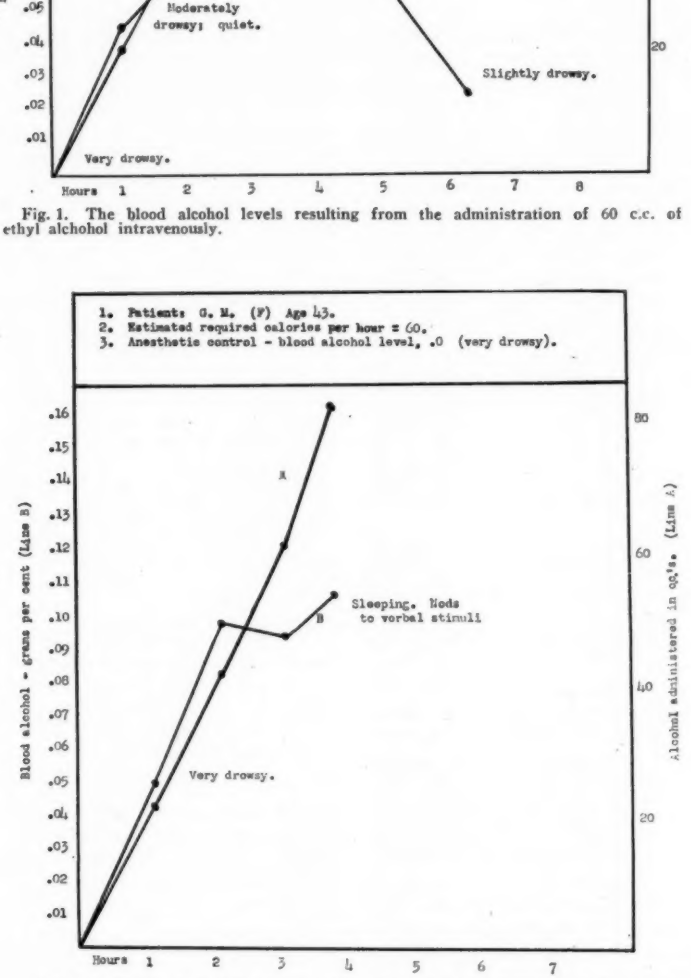

Fig. 2. The blood alcohol levels resulting from the administration of 80 c.c. of ethyl alcohol intravenously.

TABLE IV. PATIENT P. K., MALE, AGED FIFTY-FOUR

Weight 117 pounds (53 kilo.).
Estimated metabolic requirement 1873
Protein requirement @ 1 gm./kilo. = 53 gm.**
N_2 requirement @ 0.4 gm./kilo. = 21**

Date	9-26-47	27	28	29	30	10-1-47	2	3	4	5	6
Total Calories	2208	2208	2208	2208	1595*	2658*	2658*	1020			
Grams Protein	150	150	150	150	83.7	171.2	171.2	158.7			
% Calories from Protein	25	25	25	25	21	24	24	62			
Urine N_2 in grams	14	14.7	12.6	12.7	15.4	lost	14.6	27.4			
N_2 Intake	24	24	24	24	13.4	27.4	27.4	25.4			
N_2 Balance	+10	+9.3	+.4	+11.3	−2	—	+12.8	−2			
Weight	118	119.5	119.5	118.5	—	—	—	—	—	—	121.0
Urine Creatinine	2.3	2.9	2.5	2.7	2.6	lost	1.4	2.6			
Blood Protein	6.7									6.2	

* 500 c.c. of citrated whole blood contributed to these calories, protein and nitrogen intake.
It will be noted a strong positive nitrogen balance was maintained when the intake was 2208 calories the first 4 days. On 10-3-47 it was negative with low total calories and very high protein per cent.
** Though they do not coincide, both of these requirements have been cited in the medical literature.

1. The grams per cent of alcohol rose rapidly, leveling off in approximately two hours.
2. The levels seemed to vary with the size of the patient. We are endeavoring to correlate the utilization of alcohol with the caloric requirement.
3. The average concentration after attaining a level at this rate of administration was approximately .05 grams per cent.
4. These low levels tend to remain effective in producing adequate sedation for several hours after discontinuing, for ordinary purposes.
5. If the administration rate is similar to the utilization rate, the levels tend to remain constant.

Table III, copied from Goodman and Gilman, indicates the symptoms from increasing blood alcohol levels.

In the alcohol blood levels of approximately 0.1 to 0.15, the patient seems distinctly depressed, particularly if associated with sodium luminal. This combination has seemed rather satisfactory for pain relief. In the lower blood alcohol level range, it has been necessary to occasionally use sodium salicylate in order to obtain relief of pain.

Figures 1 and 2 illustrate the administration of alcohol on a caloric basis. Sufficient calories are offered in three hours to cover the basal needs for 5.6 hours. The peak levels here seem desirable for the immediate postoperative period. In Figure 2 we note a secondary rise when the rate is increased.

It will be observed that the range of blood alcohol level is lower than the average intoxication level and far indeed from the lethal level. Recently we have found that higher levels might be indicated to afford more pain relief on the first postoperative day. The rate of drip of this solution must be regulated lest too rapid infusion of amino acids produce nausea and vomiting. In raising the blood alcohol levels higher, we have, therefore, chosen to add more alcohol to the Aminosol or to administer more rapidly solutions of lower alcohol percentage.

Utilization of Amino Acids for Nitrogen Metabolism

One liter of 5 per cent Aminosol provides the equivalent of 50 grams of utilizable protein having a nitrogen value of 8 grams. We have conducted nitrogen balance studies and have demonstrated repeatedly the ability of the body to maintain a stron gpositive nitrogen balance with 2,000 or 3,000 cubic centimeters of glucose, Aminosol and alcohol (each 5 per cent). Three liters of this solution provides 2,208 calories and 24 grams of nitrogen. Nitrogen requirement has been established by other investigators as 4 grams per kilogram. A 154-pound man (70 kilograms) would then require 28 grams of nitrogen.[1]

Variations in the carbohydrate, amino acids and calories (as provided by alcohol) have clearly demonstrated to us that a strong positive nitrogen balance is difficult to maintain unless adequate calories are available, even though the nitrogen intake exceeds considerably the normal requirements. Nitrogen equilibrium may be obtained with a relatively low caloric intake and normal nitrogen intake, but that does not allow much opportunity for rebuilding of nitrogen-containing tissues. Healing tissues require abundant nitrogen, and in order that this may obtain, a strong positive nitrogen balance must be evident.

Some of the above observations are illustrated in Table IV, where it will be observed that a strong positive nitrogen balance was maintained when the caloric intake was 2,208 as indicated for the dates September 26, 27, 28, and 29. On September 3, 1947, a negative nitrogen balance resulted when total calories were insufficient though the percentage of calories derived from protein and the grams of protein were both increased above the usual physiologic requirements.

The study of other protocols led us to believe that, presuming the caloric intake to be sufficient, approximately 25 or 30 per cent of the calories derived from protein provide optimum physiologic economy. In other words, if the normal amount of nitrogen is provided and protected with added glucose and calories, a relatively low nitrogen quantity is excreted and a high positive nitrogen balance is obtained. The retained nitrogen can be utilized for tissue repair. It is important that a strong positive nitrogen balance be maintained during the healing phase of any disease. Cannon,[3] in the *Journal of the American Medical Association* has pointed out on the basis of his experimental studies that "tissue synthesis requires enough calories to facilitate the conversion of amino acids into tissue protein, but above a certain level additional calories are superfluous." Our studies have been leading us to the same conclusion.

Utilization of Glucose

It is not necessary to discuss the utilization of glucose at this time, as these studies are adequately dealt with in the medical literature. It is well to recall, however, that glucose is essential for the proper metabolism of carbohydrate, and proteins, without which protein must be utilized to provide a deficiency of glucose before it can be used for tissue repair. If given slowly, glucose can be consumed in greater quantities than it is practical to administer. Woodyatt demonstrated that, if given slowly, .9 gram per kilogram per hour could be utilized by the normal body for an indefinite interval.[1] It can be administered in 10 per cent concentrations for short periods of time and in 7.5 per cent concentration for longer periods of time without producing thrombosis of the vein.[8] At the rate at which we have administered it (5 per cent—7.5 per cent—10 per cent) we have noticed no appreciable loss of glucose through the urine. A 5 per cent solution administered over four hours provides approximately .2 gram per kilogram per hour for a 150-pound man.

Comments

Our clinical observations suggest that by maintenance of full caloric and nutrional need, smoother convalescence and a more rapid feeling of well-being is obtained than when the patient is placed on a routine postoperative, clear, liquid, soft, light and full diet.

Vitamin C and the B complex factors are administered when oral nutrition is inadequate. Experimental studies have shown rapid depletion of these vitamins when they are not obtained in a daily diet. Experiments have also shown the importance of these vitamins in protein metabolism and wound healing.

These studies are still somewhat in the nature of a preliminary report, in that we have not yet carried out these investigative studies on enough individual cases. However, our clinical observations have been adequately convincing so that we feel free in recommending this method of preoperative and postoperative nutrition for all patients who must otherwise suffer the effects of semistarvation for a week or 10 days.

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THE RATIONALE OF ELIMINATING STARVATION POSTOPERATIVELY

CARL O. RICE, M.D., Ph.D., J. H. STRICKLER, M.D., and BURTON A. ORR, M.D.
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Dr. Strickler has indicated a statistically significant difference in the incidence of a certain number of postoperative complications and sequelae. He has indicated that morphine has contributed to some of such sequelae. On this basis we have undertaken some special studies relative to the mechanism of gas pain colic.

Preoperative and postoperative flat roentgenograms of the abdomen revealed gas in both the small and large bowels within a few hours after operation, whereas it was not evident before operation. This finding was constant in all cases whether the patient had received morphine or not.

In the morphine group we found areas of segmental spasm in the colon in eight out of ten cases. In the no-morphine group there were no segmental spasms.

We then checked with scout films a number of patients presenting gas pain colic, some of which were included in the above 10 cases, and in these we found segmental spasm.

Benzedrine sulphate, 10 milligrams, was administered to patients with gas pain colic and within a few minutes the segmental spasm disappeared. Gas pain colic was relieved and the gas was rapidly dissipated. This suggested to us that gas pain colic involved a mechanism wherein an area of segmental spasm develops, upon which is superimposed a peristaltic rush. Morphine, because of its tendency to increase the tone of the bowel, also may produce areas of segmental spasm, thereby contributing to the increased incidence of gas pain colic. Benzedrine has therefore been used to relieve gas pain colic. Gas pain colic and gas distention must be differentiated.

In an effort to provide a substitute for morphine to relieve postoperative discomfort, we used intravenous alcohol. In the past eight or ten months we also have provided glucose and amino acids, each for its nutritional and caloric value. This led to a study of nitrogen balance.

Dr. Orr has described some of the investigations we have undertaken at St. Barnabas Hospital pertaining to preoperative and postoperative nutrition, and he also has described the technique of administration of glucose, amino acids and alcohol. Some of this still is in the nature of a preliminary report. Further substantiation will be needed. However, these data have helped us form opinions, and we believe we are justified in recommending them to you even at this early stage.

Physiologic Properties and Nutritional Values of Alcohol

Alcohol provides sedation and calories. The determination of alcohol levels of the blood, in association

This discussion, based on investigative studies made at the St. Barnabas hospital, has been made possible through the generosity of the hospital board, the hospital administration and the professional personnel, all of whom have contributed cheerfully of their encouragement, money or effort.

TABLE I

Period	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI
Av. Total Calorie Intake per day	2646	2501	3207	1936	1392	1996	2969	3108	2116	432	2178	1629	2333	1748	2181	2208
Av. Calories from Protein	369	362	472	294	240	362	570	600	400	87.6	420	368	521	443	560	600
% Calories from Protein	13.9%	14.4%	14%	15%	17%	18%	19%	19%	19.8%	20.3%	20%	22.5%	22.3%	25%	25%	27%
Av. Nitrogen Intake in grams	14.66	14.43	18.9	12.4	9.6	14.5	22.4	24	16	3.5	16.9	14.7	20.9	17.8	22.4	24
Av. Nitrogen Output in grams	12.77	12.16	4.5	19.48	9.9	10.8	14.2	11.77	12.6	11.1	9.3	9.6	15.1	14.5	6.1	11.46
Nitrogen Balance	+1.89	+2.29	+14.4	−7.58	−.3	+3.7	+8.2	+12.23	+3.4	−7.6	+7.6	+5.1	+5.8	+3.3	+16.3	12.54
Temperature	99.7°	101.4°	101.8°	100.8°	100.6°	100°	102.8°	101.4°	101°	102.2°	100°	101.8°	102.6°	101.6°	101.6°	102.4°
Calculated calorie requirement—2071																

Male, aged fifty-nine, weight 71 kilograms. Each period represents either two or three days in which the caloric and protein intake were similar. The figures represent the average values, nitrogen balance studies having been made every day.

with subjective symptoms and objective findings, suggests that the first effect of alcohol is mild sedation, obtained when the blood level reachs .04 to .08 grams per cent. In most instances this is sufficient to relieve the patient of the immediate postoperative distress.

After the patient returns to his bed from the operating room and is still semiconscious, he is given his initial intravenous glucose, amino acids and alcohol. In some instances we eliminate the amino acids from the initial dose, because of its tendency to produce nausea in a patient who already is nauseated from his anesthetic.

The rate of administration is increased for the first twenty or thirty minutes so that the patient receives approximately 15 or 20 cubic centimeters of alcohol during this period. This is done with the idea of promoting sedation. Thereafter, the rate of administration is decreased and maintained at a constant rate throughout a full four-hour period.

Most patients obtain sufficient sedation and analgesia from this rate of administration. A few have received intravenous sodium salicylate in addition, so as to obtain the synergistic effect of alcohol and salicylate.

We are interested in sedation and analgesia for only the first twelve or twenty-four hour period. Thereafter, patients rarely require additional analgesia.

After sedation has been obtained, we then are interested in this solution for its nutritional value. Alcohol provides approximately 6 calories per cubic centimeter of immediate energy. It thereby spares reserve stores of carbohydrate and protein. Alcohol is metabolized at the rate of approximately 10 cubic centimeters an hour. Only a small quantity is excreted unchanged. The excess, if it is given too rapidly, is held in the blood stream and the tissues and, depending upon its concentration, may produce sedation, analgesia, narcosis, intoxication, stupor and death. The sedative and analgesic, narcotic and intoxicating dose is sufficiently far removed from the lethal dose to make it safe for therapeutic purposes.

Alcohol increases capillary dilatation. It is said to act as an antispasmodic in the gastrointestinal tract, contributing thereby to the elimination of segmental spasm and gas pain colic. It has been used clinically for its beneficial effects upon peritonitis and paralytic ileus. It increases the depth of respiration, thereby contributing to eliminate pulmonary complications. It promotes mild diuresis. It causes no significant change in the blood pressure or pulse.

The undesirable effects of alcohol, namely intoxication, stupor and death, are easily avoided clinically by controlling the rate of administration. Its intravenous administration produces no "hang-over" symptoms.

With these desirable features of alcohol as a physiologic drug and a source of easy energy, we have used it routinely in all our patients postoperatively with the above thought in mind.

Nutritional Value of Amino Acids

Numerous investigations have demonstrated recently the value of maintaining a positive nitrogen balance in the sick individual, both preoperatively and postoperatively. A high protein, adequate calorie diet is the first requisite in this regard. It has been noted repeatedly in medical literature that the difficulty in maintaining adequate nutrition in the individual who cannot eat is that of providing sufficient calories without, at the same time, providing too much fluid.

Six thousand cubic centimeters of fluid are needed to provide 2,400 calories, using 5 per cent glucose and 5 per cent amino acids. Increasing the concentrations of glucose and amino acids to decrease the fluid content results in undesirable sequelae: thrombosis from high concentrations of glucose; nausea, flushing, giddiness from greater concentrations of amino acids. By adding alcohol to the glucose-amino acids solution, caloric value can be doubled almost. In this manner a patient can be given his full caloric, nitrogen and glucose requirements in 3,000 cubic centimeters or less of intravenous solution.

I am not convinced that forced or tube feedings can provide these nutritional requirements any better than can be done by our intravenous method.

Dr. Orr has demonstrated the protocol of a patient in whom nitrogen balance studies were conducted, pointing out the need for providing sufficient calories in order to maintain a positive nitrogen balance.

I should like to emphasize the need of providing also an adequate percentage of calories derived from protein as indicated in the protocol of a man, aged fifty-nine, of 71 kilograms weight, who suffered from carcinoma of the colon (Table I). He was provided with adequate calories and at least 1 gram of protein per kilogram body weight. In periods I and II, where approximately 14 per cent of the calories were derived from proteins, he was barely in nitrogen balance, and, as in period IV, when the total calories were decreased, he showed a negative nitrogen balance, even though the grams of protein were adequate and the percentage of nitrogen slightly higher. In period III where the percentage of protein was kept the same while the calories were in-

creased, a strong positive nitrogen balance developed. Comparing this with period VIII, in which the calories were kept essentially the same but the percentage of protein was increased, a strong positive nitrogen balance still developed. If the calories are again decreased, though the protein percentage continues to remain high, the nitrogen balance also decreases, as indicated by comparing period VIII with periods IX and XIV.

It will be noted that when the caloric intake dropped below the calculated caloric requirement (2071C), the patient was in negative nitrogen balance, as indicated in periods IV, V and X.

In periods VI and XII, the caloric intake was inadequate, but the protein intake was high. In these two periods, the patient was barely in positive nitrogen balance. When these two periods are compared with periods III, XV and XVI, in which both the calories and protein were high, it is noted that a strong positive nitrogen balance developed.

The study of these nitrogen balance figures, with varying calories and percentages of protein, presuming both to be nutritionally adequate under normal conditions, have convinced us that the optimum nutritional requirement for the sick individual should contain the full metabolic caloric requirements within which 25 or 30 per cent of the calories should be derived from protein. The optimum daily requirement of protein in health has been established at approximately 1 gram per kilogram of body weight (70 grams for a 154-pound man). In sickness, this requirement may need to be doubled. Certainly, it should not be decreased.

Experiments cited in the medical literature have shown quite convincingly that tissues heal more slowly and inadequately if protein requirements are not maintained. Nitrogen balance studies have indicated that sick individuals and almost all postoperative patients obtain very rapidly a negative nitrogen balance. This may be due both to an inadequate protein or caloric intake and to the excess destruction of protein incident to the illness. We have observed that when the fever increases, the nitrogen balance decreases, as illustrated by comparing periods XV and XVI.

It is almost routine in many hospitals to prescribe no food for the first twenty-four or forty-eight postoperative hours. On the first postoperative day (twenty-four hours after operation) the patient is allowed clear liquids, in which there are no calories and no grams of protein. On the second postoperative day a general liquid diet provides 903 calories and 24 grams of protein. On the third postoperative day a soft diet provides 1,510 calories and 41 grams of protein. On the fifth postoperative day a regular diet provides 2,259 calories and 70 grams of proteins. Presuming that the patient eats all that is offered, he receives inadequate protein throughout his entire hospital stay. These hospital diets provide approximately 10 per cent of the calories from protein. This is only a few points higher than the lowest protein diet that a dietician was able to devise when we asked for such for one very co-operative young lady in the interest of these studies. I presume that we might have tried Crisco and corn syrup.

By the time the patient has reached a full diet stage on the usual postoperative routine, he has been so severely starved of protein that it may require ten or fourteen days before he again regains his nutritional balance. It is no wonder that a patient feels so exhausted and lacks energy and has lost weight when he leaves the hospital.

Comments and Conclusions

We believe that the use of morphine preoperatively is entirely superfluous, and that its postoperative use has become much too routine. There are so many undesirable features of morphine which can be eliminated only if the use of morphine is discontinued. Satisfactory analgesia can be obtained in most instances with the use of intravenous alcohol and non-narcotic analgesics.

No significantly undesirable features have been produced with the intravenous use of glucose, amino acids and alcohol.

Routine hospital diets are shamefully deficient in protein.

On the basis of our nitrogen balance studies, we believe that nitrogen equilibrium can he obtained on a relatively low caloric intake, if adequate nitrogen is given. It is difficult, however, to maintain a strong positive nitrogen balance, unless adequate calories are provided to cover the metabolic needs. When this is done, a surplus of nitrogen can be retained. This is necessary for healing processes, whenever the need arises from surgical or medical diseases.

If adequate nutrition (protein, carbohydrate and calories) cannot be eaten by the convalescent individual, these should be supplemented with intravenous feedings.

We believe, as we shall eventually endeavor to prove, that patients who have been placed on this regime have a feeling of well-being within twenty-four hours after operation and present a lower incidence of morbidity while in the hospital, because they have not been deprived of adequate nutrition for any period of time.

Must we continue to keep our patients in a state of constant semistarvation when we already know from numerous experiments and clinical observation that it is not beneficial to the healing and feeling of well-being in our patients?

Discussion

DR. L. H. FOWLER: Dr. Rice, have you noticed any problem in the nursing care of these patients given alcohol? I have heard that they have been discouraged because of the difficulties in nursing care.

DR. CARL RICE: I have noticed problems with nurses. The nurses don't like to measure anything, but that might be our fault, since we require the nurse to measure and save urine output, to weigh daily caloric intake, and to do numerous other minor chores.

DR. D. MACKINNON: I would like to ask if the admission and discharge weights are the same—if there is any correlation between nitrogen balance and weights?

DR. CARL RICE: We found a correlation in a large series. We have kept daily weight records of patients who receive this medication and have observed a gain in weight during the hospital stay. We observed a 10-

pound gain in weight for one individual who received nothing but intravenous feeding for over three weeks.

DR. ARTHUR ZIEROLD: I believe such a paper as this deserves an extended discussion as it represents a tremendous amount of work and is one of the few scholarly attacks upon what has been a clinical problem heretofore. I most heartily agree with the basic ideas Dr. Rice has advanced and have attempted to follow them myself.

When Key's work on starvation is published we shall have a considerable fund of information which will aid us in measuring the effect of nitrogen balance. The well-nourished individual will probably tolerate a longer period than we believe at this time without a critical loss of his tissue protein. That is one thing. Another thing is that we have difficulty in determining a base line. We have no good means of determining the state of the individual's tissue protein unless we go to the extent of taking a specimen, digesting it, analyzing it and determining exactly what his state of nutrition is, because plasma protein tends to be constant at rest. We have no good base line and Dr. Rice had to accept an arbitrary figure and take this as normal without any exact measurement. We all know that most of our patients get along in spite of the nutrition we have forced upon them and that is in some small way evidence that the average individual will tolerate starvation for a considerable time without arriving at a critical level. In the average case, it is probable that it will not be necessary to use parenteral means to maintain positive nitrogen balance. While it is highly desirable that the individual maintain positive nitrogen balance throughout his period of stay in the hospital, again let me say that the majority of the individuals who have not suffered exhaustive disease, who have not had considerable weight loss (excluding infants as well as the elderly), are individuals in the middle decades of life and are in a good state of nutrition. They will not need parenteral nutrition unless there is protracted starvation. For some time at the Minneapolis General Hospital we have fed exhausted patients beef plasma by mouth and found that a good means of measuring nitrogen balance, and I am inclined at the present time to attempt to maintain that by feeding amino acids and other proteins by mouth and by tube if possible. My patients are fed that after operation, sometimes the day of operation, and you expect them to return to a normal diet at once. They have no liquid diet but a solid diet, except the patients who have operations on the stomach or upper intestinal tract. Except in a very few instances, it is not necessary to starve these patients more than four days and most of the patients will tolerate that.

Use of glucose has been mentioned. There is a phase of glucose action which I don't believe has been noted commonly, and that is its effect on smooth muscle. If you will take a piece of intestine in the laboratory and put that on a nerve muscle and saturate that in an isotonic glucose solution, that muscle will relax at once. That is experimental evidence of its effect on smooth muscle. Clinical evidence can be demonstrated in your own children. They will eat sweets, become satiated and the musculature will relax. Another illustration is in operations on the gastrointestinal tract. You will notice during operation that the peristalsis will become much more noticeable, and if you will give that individual a little concentrated glucose, you will notice the gastrointestinal musculature will relax and become quiet. I mention this because I believe that there is evidence to indicate that we precipitate ileus by repeated and excessive amounts of glucose.

Now it is necessary to use that glucose in the ultization of amino acids. I am very much interested in the use of alcohol because I have been casting around for several years for something to substitute for morphine because it gives rise to what the patient calls "gas pains." I don't like that term. It implies distortion where no distortion exists. It is probably spasm in the morphine half of the morphine compound. I would be delighted if we could use alcohol as a sedative to do away with morphine after operation. There should be very little sedation. Early ambulation and early feeding can dispense with hospital diets of fifty to 100 years ago, as they are certainly not adequate or suited to the surgery we practice today.

DR. HAMLIN MATTSON: I would like to ask Dr. Rice if nitrogen balance figures were broken down for early ambulation or prolonged bed rest. Bed rest alone can induce negative nitrogen balance. Was that considered in the study?

DR. CARL RICE: No. We did not break down the figures as to early ambulation. When giving the patients early feeding, we found it difficult to hold them in bed.

DR. L. C. CULLIGAN: I would like to ask with reference to cost of supplying patients with 2 to 3 liters of nitrogen with added alcohol. It is my offhand opinion that it would cost $3 or $4 per liter, perhaps up to $5. Am I wrong in that? In other words, it would cost $12 to $15 per day to give the patient 2 to 3 liters of fluid. The use of alcohol in that way is tied up with the utilization of vitamin B in the body. I wonder whether adequate doses of vitamin B and vitamin C are supplied?

DR. CARL RICE: If the patient feels well in twenty-four hours, the cost is little, and the feeling of well being on the first postoperative day is worth the cost. Vitamins B and C are provided as described in the text of the article. The patient is given intravenous vitamins B and C every day that parenteral feedings are used.

DR. L. H. FOWLER: I would like to ask whether there is any correlation between the amount of alcohol given by mouth and that by vein. Couldn't it be given by mouth as well?

DR. CARL RICE: Alcohol taken by mouth produces a "hang-over." Whiskey, 84 proof, given by mouth provides 42 per cent alcohol. Intravenously, 95 per cent alcohol is used with aminosal or amigen. After an operation, the gastrointestinal tract is upset already, and it is my impression that the gastrointestinal tract does not take food well for twenty-four hours, so we let patients go without food by mouth and provide them with parenteral calories for the first twenty-four-hour period. In 95 per cent of our patients, that is all they require. After that we put the patients on a full diet. If the patient is not eating the caloric requirement, we give him another bottle intravenously. These studies were made on long-time hospital cases where they couldn't eat and we had to provide them nutrition.

DR. E. H. HENRIKSON: If gas pains should persist after benzedrine sulphate intravenously, how long before you should repeat it, and should you use phenobarbital to offset benzedrine?

DR. CARL RICE: We have repeated benzedrine in about four hours. In most instances, benzedrine gave relief in fifteen minutes to one hour. Benzedrine given intravenously produces a slight rise in blood pressure. It is well to use some sedative after having given benzedrine, in order to counteract the wakeful effect of benzedrine.

DR. E. BENJAMIN: Are the alcohol and amino acids available in a commercial preparation?

DR. CARL RICE: Yes. The glucose and amino acids are available commercially. We obtain alcohol out of the jug from the drug room, using the 95 per cent strength, merely adding it to the commercially prepared amigen or aminosal.

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W. S. Hitchings, M.D. ..... Lakefield
W. H. Halloran, M.D. ..... Jackson
J. T. Rose, M.D. ..... Lakefield

KANABEC COUNTY
C. S. Bossert, M.D. ..... Mora
W. F. Nordman, M.D. ..... Mora

KANDIYOHI COUNTY
J. C. Jacobs, M.D. ..... Willmar
B. J. Branton, M.D. ..... Willmar
R. J. Ripple, M.D. ..... New London

KITTSON COUNTY
F. F. Stocking, M.D. ..... Hallock
A. S. Berlin, M.D. ..... Hallock

KOOCHICHING COUNTY
R. D. Hanovan, M.D. ..... Littlefork
F. G. Chermak, M.D. ..... International Falls

LAC QUI PARLE COUNTY
*C. M. Johnson, M.D. ..... Dawson
W. N. Lee, M.D. ..... Madison

LAKE COUNTY
R. F. Mueller, M.D. ..... Two Harbors

LE SUEUR COUNTY
E. E. Novak, M.D. ..... New Prague
Swan Ericson, M.D. ..... Le Sueur
R. A. Curtis, M.D. ..... LeCenter

LINCOLN COUNTY
P. E. Hermanson, M.D. ..... Hendricks

LYON COUNTY
B. C. Ford, M.D. ..... Marshall

MAHNOMEN COUNTY
K. W. Covey, M.D. ..... Mahnomen
J. J. Ederer, M.D. ..... Mahnomen

MARSHALL COUNTY
C. H. Holmstrom, M.D. ..... Warren
I. G. Wiltrout, M.D. ..... Oslo
A. E. Carlson, M.D. ..... Warren

MARTIN COUNTY
R. C. Hunt, M.D. ..... Fairmont
H. B. Bailey, M.D. ..... Fairmont
J. J. Heimark, M.D. ..... Fairmont

McLEOD COUNTY
H. H. Holm, M.D. ..... Glencoe
O. W. Scholpp, M.D. ..... Hutchinson
E. W. Lippman, M.D. ..... Hutchinson

MEEKER COUNTY
K. A. Danielson, M.D. ..... Litchfield
D. C. O'Connor, M.D. ..... Eden Valley

MILLE LACS COUNTY
Melvin Vik, M.D. ..... Onamia
J. D. Ryan, M.D. ..... Milaca

MORRISON COUNTY
A. M. Watson, M.D. ..... Royalton
A. E. Amundsen, M.D. ..... Little Falls
E. J. Simons, M.D. ..... Swanville

MOWER COUNTY
R. S. Hegge, M.D. ..... Austin
C. L. Sheedy, M.D. ..... Austin
L. G. Flanagan, M.D. ..... Austin

MURRAY COUNTY
L. A. Williams, M.D. ..... Slayton
B. M. Stevenson, M.D. ..... Fulda
R. F. Pierson, M.D. ..... Slayton

NICOLLET COUNTY
F. P. Strathern, M.D. ..... St. Peter
H. J. Nilson, M.D. ..... North Mankato

NOBLES COUNTY
E. W. Arnold, M.D. ..... Adrian
B. O. Mork, Sr., M.D. ..... Worthington
E. A. Kilbride, M.D. ..... Worthington

NORMAN COUNTY
Eskil Erickson, M.D. ..... Halstad
Theodore Loken, M.D. ..... Ada

OLMSTED COUNTY
J. M. Berkman, M.D. ..... Rochester
F. D. Smith, M.D. ..... Rochester
C. B. McKaig, M.D. ..... Pine Island

OTTER TAIL COUNTY
A. J. Lewis, M.D. ..... Henning
W. L. Burnap, M.D. ..... Fergus Falls
G. C. Jacobs, M.D. ..... Fergus Falls

PENNINGTON COUNTY
O. F. Mellby, M.D. ..... Thief River Falls
O. G. Lynde, M.D. ..... Thief River Falls
H. H. Hedemark, M.D. ..... Thief River Falls

PINE COUNTY
C. G. Kelsey, M.D. ..... Hinckley
Manuel Brownstone, M.D. ..... Sandstone

PIPESTONE COUNTY
W. G. Benjamin, M.D. ..... Pipestone
H. DeBoer, M.D. ..... Edgerton
J. G. Lohmann, M.D. ..... Pipestone

POLK COUNTY
C. L. Oppegaard, M.D. ..... Crookston
J. F. Norman, M.D. ..... Crookston
Abraham Shedlov, M.D. ..... Fosston

POPE COUNTY
E. A. Eberlin, M.D. ..... Glenwood
B. I. McIver, M.D. ..... Lowry

RED LAKE COUNTY
F. M. Petkevich, M.D. ..... Silver Springs, Md.

REDWOOD COUNTY
T. E. Flinn, M.D. ..... Redwood Falls
W. A. Brand, M.D. ..... Redwood Falls
G. B. Eaves, M.D. ..... Wabasso

RENVILLE COUNTY
J. Dordal, M.D. ..... Sacred Heart
A. M. Fawcett, M.D. ..... Renville
R. E. Erickson, M.D. ..... Hector
J. A. Cosgriff, M.D. ..... Olivia

RICE COUNTY
F. R. Huxley, M.D. ..... Faribault
D. W. Francis, M.D. ..... Morristown
Warren Wilson, M.D. ..... Northfield

ROCK COUNTY
C. L. Sherman, M.D. ..... Luverne
O. W. Anderson, M.D. ..... Luverne
F. W. Bofenkamp, M.D. ..... Luverne

ROSEAU COUNTY
J. L. Delmore, M.D. ..... Roseau
N. M. Leitch, M.D. ..... Warroad
D. O. Berge, M.D. ..... Roseau

ST. LOUIS COUNTY
A. T. Laird, M.D. ..... Duluth
M. H. Tibbetts, M.D. ..... Duluth
P. S. Rudie, M.D. ..... Duluth

SCOTT COUNTY
H. M. Jurgens, M.D. ..... Belle Plaine
B. F. Pearson, M.D. ..... Shakopee

SHERBURNE COUNTY
A. B. Roehlke, M.D. ..... Elk River
E. F. Clothier, M.D. ..... Elk River
Gordon H. Tesch, M.D. ..... Elk River

SIBLEY COUNTY
Rolf Hovde, M.D. ..... Winthrop
Thomas Martin, M.D. ..... Arlington
D. C. Olson, M.D. ..... Gaylord

STEARNS COUNTY
A. H. Zachman, M.D. ..... Melrose
C. F. Brigham, M.D. ..... St. Cloud
W. T. Wenner, M.D. ..... St. Cloud

STEELE COUNTY
D. E. Morehead, M.D. ..... Owatonna
L. V. Berghs, M.D. ..... Owatonna
D. H. Dewey, M.D. ..... Owatonna

STEVENS COUNTY
E. T. Fitzgerald, M.D. ..... Morris
M. L. Ransom, M.D. ..... Hancock

SWIFT COUNTY
Hans Johnson, M.D. ..... Kerkhoven
C. L. Scofield, M.D. ..... Benson
E. J. Kaufman, M.D. ..... Appleton

TODD COUNTY
M. E. Mosby, M.D. ..... Long Prairie
J. M. Cook, M.D. ..... Staples
E. J. Simons, M.D. ..... Swanville

TRAVERSE COUNTY
N. F. Doleman, M.D.* ..... Tintah
A. L. Lindberg, M.D. ..... Wheaton

WABASHA COUNTY
T. G. Wellman, M.D. ..... Lake City
B. J. Bouquet, M.D. ..... Wabasha
E. W. Ellis, M.D. ..... Elgin

WADENA COUNTY
L. T. Davis, M.D. ..... Wadena
H. G. Bosland, M.D. ..... Verndale
C. H. Pierce, M.D. ..... Wadena

WASECA COUNTY
O. J. Swenson, M.D. ..... Waseca
H. M. McIntire, M.D. ..... Waseca
B. J. Gallagher, M.D. ..... Waseca

WASHINGTON COUNTY
J. W. Stuhr, M.D. ..... Stillwater
E. R. Samson, M.D. ..... Stillwater

WATONWAN COUNTY
O. B. Bergman, M.D. ..... St. James
F. L. Bregel, M.D. ..... St. James

WILKIN COUNTY
W. E. Wray, M.D. ..... Campbell

WINONA COUNTY
Herbert Heise, M.D. ..... Winona

WRIGHT COUNTY
T. J. Catlin, M.D. ..... Buffalo
L. H. Bendix, M.D. ..... Annandale
R. D. Thielen, M.D. ..... St. Michael

YELLOW MEDICINE COUNTY
E. R. Hudec, M.D. ..... Echo
P. G. Schmidt, Jr., M.D. ..... Granite Falls
(No committees have been appointed in the following counties: Cook and Lake of the Woods.)

*Deceased.

COUNCILOR DISTRICTS

DISTRICT NO. 1
R. L. J. Kennedy, M.D. ..... Rochester
Counties—Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona.

DISTRICT NO. 2
L. L. Sogge, M.D. ..... Windom
Counties—Cottonwood, Faribault, Jackson, Martin, Murray, Nobles, Pipestone, Rock.

DISTRICT NO. 3
L. G. Smith, M.D. ..... Montevideo
Counties—Big Stone, Brown, Chippewa, Kandiyohi, Lac Qui Parle, Lincoln, Lyon, Meeker, Pope, Redwood, Stevens, Swift, Traverse, Yellow Medicine, Watonwan.

DISTRICT NO. 4
A. E. Sohmer M.D. ..... Mankato
Counties—Blue Earth, Carver, Le Sueur, McLeod, Nicollet, Renville, Scott, Sibley, Waseca.

DISTRICT NO. 5
E. M. Hammes, M.D. ..... Saint Paul
Counties—Anoka, Chisago, Dakota, Isanti, Kanabec, Mille Lacs, Pine, Ramsey, Sherburne, Washington.

DISTRICT NO. 6
O. J. Campbell, M.D. ..... Minneapolis
Counties—Hennepin, Wright.

DISTRICT NO. 7
W. W. Will, M.D. ..... Bertha
Counties—Aitkin, Beltrami, Benton, Cass, Clearwater, Crow Wing, Hubbard, Koochiching, Morrison, Stearns, Todd, Wadena.

DISTRICT NO. 8
W. L. Burnap, M.D. ..... Fergus Falls
Counties—Becker, Clay, Douglas, Grant, Kittson, Lake of the Woods, Mahnomen, Marshall, Norman, Ottertail, Pennington, Polk, Red Lake, Roseau, Wilkin.

DISTRICT NO. 9
F. J. Elias, M.D. ..... Duluth
Counties—Carlton, Cook, Itasca, Lake, St. Louis.

Woman's Auxiliary to the Minnesota State Medical Association

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Mrs. Harold F. Wahlquist	*President-Elect*	Minneapolis
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Mrs. A. E. Cardle	*Fourth Vice President*	Minneapolis
Mrs. H. W. Satterlee	*Recording Secretary*	Lewiston
Mrs. George E. Penn	*Treasurer*	Mankato
Mrs. F. C. Westerman	*Auditor*	Montgomery
Mrs. Haddon M. Carryer	*Historian*	Rochester
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Mrs. R. N. Jones	*Seventh District*	St. Cloud
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CHAIRMEN OF COMMITTEES

Advisory—Mrs. E. M. Hammes ..... St. Paul

Archives—Mrs. Martin Nordland ..... Minneapolis

Auxiliary Posters—Mrs. A. B. Rosenfield . Minneapolis

Bulletin—Mrs. C. L. Oppegaard ..... Crookston

Cancer Board Representative—Mrs. Mark E. Ryan St. Paul

Editor, Minnesota Medicine—Mrs. John Dordal Sacred Heart

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Organization—Mrs. Harold F. Wahlquist . Minneapolis

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Public Relations—Mrs. Hobart Johnson ..... Mankato

Resolutions—Mrs. Neil Dungay ..... Northfield

Revisions—Mrs. C. C. Allen ..... Austin

Social—Mrs. Harold G. Benjamin ..... St. Louis Park

In Memoriam Service—Mrs. A. T. Laird ..... Duluth

County Society Roster

Key to Symbols: *Deceased; † Affiliate, Associate or Life Member; ‡ In Service; §Wife is Member of Woman's Auxiliary.

BLUE EARTH COUNTY MEDICAL SOCIETY

Regular meetings, last Monday of each month
Annual meeting in May
Number of Members: 41

President
Butzer, John A. ..... Mankato

Secretary
‡Vezina, J. C. ..... Mapleton

‡Andrews, R. N. ..... Mankato
Batdorf, B. N. ..... Good Thunder
‡Butzer, J. A. ..... Mankato
†‡Dahl, G. A. ..... Mankato
‡Denman, A. V. ..... Mankato
†Edwards, R. T. ..... Big Fork, Mont.
Eustermann, J. J. ..... Mankato
‡Franchere, F. W. ..... Lake Crystal
‡Fugina, G. R. ..... Mankato
‡Haes, J. E. ..... Mankato
Hankerson, R. G. ..... Minnesota Lake
§Hassett, R. G. ..... Mankato
§Hoeper, P. G. ..... Mankato
§Howard, E. G. ..... Mapleton
§Howard, M. I. ..... Mankato
Huffington, H. L. ..... Mankato
§Jones, O. H. ..... Mankato
§Juliar, R. O. ..... St. Clair
§Kaufman, W. B. ..... Mankato
§Kearney, R. W. ..... Mankato
§Kemp, A. F. ..... Mankato
§Koenigsberger, Chas. ..... Mankato
Liedloff, A. G. ..... Mankato
Luck, Hilda ..... Mankato
§Macklin, W. E. ..... Mankato
§Mickelson, J. C. ..... Mankato
§Miller, V. I. ..... Mankato
§Morgan, H. O. ..... Amboy
§Penn, G. E. ..... Mankato
§Samuelson, L. G. ..... Mankato
§Schlesselman, J. T. ..... Mankato
†Schmidt, P. A. ..... Good Thunder
§Schmitz, A. A. ..... Mankato
§Sjoding, J. D. ..... Mankato
§Smith, P. M. ..... Lake Crystal
§Sohmer, A. E. ..... Mankato
§Stillwell, W. C. ..... Mankato
Stone, N. F. ..... Mankato
§Troost, H. B. ..... Mankato
§Vezina, J. C. ..... Mapleton
Wentworth, A. J. ..... Mankato
Williams, H. O. ..... Lake Crystal

BLUE EARTH VALLEY MEDICAL SOCIETY

Faribault and Martin Counties
Regular meetings, first Thursday of month
Annual meeting, first Thursday in November
Number of Members: 33

*President
Virnig, M. P. ..... Wells

Secretary
Boysen, Herbert ..... Madelia

§Armstrong, R. S. ..... Winnebago
§Bailey, R. B. ..... Fairmont
Barr, W. H. ..... Wells
§Boysen, Herbert ..... Madelia
§Burmeister, R. O. ..... Welcome
§Chambers, W. C. ..... Blue Earth
Cooper, M.D. ..... Winnebago
§Drexler, G. W. ..... Blue Earth
†Farrish, R. C. ..... Sherburn
§Gardner, V. H. ..... Fairmont
§Grogan, J. M. ..... Ceylon
Hanson, Lewis ..... Frost
§Heimark, J. J. ..... Fairmont
†Holm, P. F. ..... Wells
Hunt, R. C. ..... Fairmont
§Hunt, R. S. ..... Fairmont
Hunte, A. F. ..... California
§Krause, C. W. ..... Fairmont
McGroarty, J. J. ..... Easton
Medlin, C. F. ..... Truman
Mills, J. L. ..... Winnebago
Parsons, R. L. ..... Monterey
Rowe, W. H. ..... Fairmont
§Russ, H. H. ..... Blue Earth
§Snyder, C. D. ..... Kiester
Skragg, Harry ..... Elmore
§Thayer, E. A. ..... Fairmont
Vaughan, V. M. ..... Truman
§Virnig, M. P. ..... Wells
§Virnig, R. P. ..... Wells
Wenzel, R. E. ..... Blue Earth
Wilson, C. E. ..... Blue Earth
§Zemke, E. E. ..... Fairmont

CAMP RELEASE MEDICAL SOCIETY

Chippewa, Lac Qui Parle and Yellow Medicine Counties
Regular meetings monthly
Annual meeting, December
Number of Members: 30

President
Lundell, C. L. ..... Granite Falls

Secretary
‡Schmidt, P. G., Jr. ..... Granite Falls

Andrejek, A. R. ..... Madison
§Bergh, L. N. ..... Montevideo
Boody, G. J., Jr. ..... Dawson
Burns, F. M. ..... Milan
Burns, M. A. ..... Milan
Guilbert, G. D. ..... Wood, Wis.
Hartfiel, H. A. ..... Montevideo
§Hauge, M. I. ..... Clarkfield
Holmberg, L. J. ..... Canby
Hudec, E. R. ..... Echo
§Johnson, V. M. ..... Dawson
†Jordan, Kathleen ..... Granite Falls
Jordan, L. S. ..... Granite Falls
§Kath, R. H. ..... Wood Lake
Kaufman, W. C. ..... Appleton
Kraemer, George ..... Canby
Larson, Paul G. ..... Ohio
Lee, W. N. ..... Madison
Lima, Ludvig ..... Montevideo
Lima, L. R., Jr. ..... Montevideo
Lundell, C. L. ..... Granite Falls
McGeary, George ..... Clarkfield
§Nelson, M. S. ..... Granite Falls
Owens, W. A. ..... Montevideo
Pertl, A. L. ..... Canby
§Roust, H. A. ..... Montevideo
§Schmidt, P. G., Jr. ..... Granite Falls
§Smith, L. G. ..... Montevideo
§Westby, Magnus ..... Madison
Westby, Nels ..... Madison

CLAY-BECKER COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, December
Number of Members: 25

President
Oliver, James ..... Moorhead

Secretary
Hendrickson, R. R. ..... Lake Park

†Aborn, W. H. ..... Hawley
Bloemendaal, E. J. G. ..... Lake Park
Bottolfson, B. T. ..... Moorhead
Bourget, G. G. ..... Detroit Lakes
Carman, J. E. ..... Detroit Lakes
Duncan, J. W. ..... Moorhead
Ellington, A. R. ..... Detroit Lakes
Hagen, O. J. ..... Moorhead
Haight, G. G. ..... Audubon
Hendrickson, R. R. ..... Lake Park
Humphrey, E. W. ..... Moorhead
Ingebrightson, E. K. G. ..... Moorhead
Johnson, Olga H. ..... Moorhead
Larson, Arnold ..... Detroit Lakes
§Moberg, C. W. ..... Detroit Lakes
Moe, A. E. ..... Moorhead
§Oliver, James ..... Moorhead
Otto, H. C. ..... Frazee
Rutledge, L. H. ..... Detroit Lakes
Sizman, G. O. ..... Georgetown
Seitz, S. B. ..... Barnesville
Shaw, H. A. ..... Minneapolis
Simison, Carl ..... Barnesville
Thysell, F. A. ..... Moorhead
Thysell, V. D. ..... Hawley

DAKOTA COUNTY MEDICAL SOCIETY

Number of Members: 5

Burns, L. S. ..... So. St. Paul
Emonds, A. J. ..... Farmington
Emonds, J. S. ..... Farmington
Field, A. H. ..... Farmington
Sanford, J. A. ..... Farmington

EAST CENTRAL MINNESOTA MEDICAL SOCIETY

Anoka, Chisago, Isanti, Kanabec, Mille Lacs, Pine and Sherburne Counties

Regular meetings, February, April, June, August, October, December
Annual meeting, December
Number of Members: 38

President
Stratte, A. K. ..... Pine City

Secretary
Roehlke, A. B. ..... Elk River

§Albrecht, H. H. ..... Lindstrom
Arends, A. L. ..... Moose Lake
Aurick, A. M. ..... Oram a
§Blomberg, W. R. ..... Princeton
Bossert, C. S. ..... Mora
Brownstone, Manuel ..... Sandstone
§Bunker, B. W. ..... Anoka
Burns, H. A. ..... Anoka
Clothier, E. F. ..... Elk River
§Crabtree, J. C. ..... Princeton
†Dedolph, T. H. ..... Minneapolis
Dredge, H. P. ..... Sandstone
§Gully, R. J. ..... Cambridge
Halvin, J. E. ..... Rush City
§Hedenstrom, L. H. ..... Cambridge
Holmes, A. E. ..... Rush City
Hubin, E. G. ..... Sandstone
Johnson, A. F. ..... Isanti
Kapsner, A. T. ..... Princeton
§McManus, W. F. ..... Princeton
§Miller, E. W. ..... Anoka
§Nordman, W. F. ..... Mora
Nygren, W. T. ..... Braham
§O'Hanlon, J. A. ..... Lindstrom
Peterson, C. A. ..... Minneapol's
§Riegel, G. S. ..... Taylors Falls
§Roehlke, A. B. ..... Elk River
Sather, R. N. ..... Mora
Schlesselman, George ..... Anoka
§Sherman, H. T. ..... Cambridge
Spurzem, R. J. ..... Anoka
Stephan, E. L. ..... Hinckley
§Stratte, A. K. ..... Pine City
§Swensen, R. G. ..... North Branch
§Tesch, G. H. ..... Elk River
Trommold, Gladys ..... Anoka
Vik, Melvin ..... Onamia
Waller, J. D. ..... Pine City
§Whitney, R. A. ..... Cambridge

FREEBORN COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, December
Number of Members: 21

President
Prins, L. R. ..... Albert Lea

Secretary
Palmerton, E. S. ..... Albert Lea

§Barr, L. C. ..... Albert Lea
§†Branham, D. S. ..... Albert Lea
§Butturff, C. R. ..... Freeborn
§Calhoun, F. W. ..... Albert Lea
§Demo, Robert A. ..... Albert Lea
Donovan, D. L. ..... Albert Lea
§Folken, F. G. ..... Albert Lea
Freligh, W. P. ..... Albert Lea
*Gamble, J. W. ..... Albert Lea
*Gamble, P. M. ..... Albert Lea
§Hansen, T. M. ..... Albert Lea
Kamp, B. A. ..... Albert Lea
Leopard, B. A. ..... Albert Lea
§Neel, H. B. ..... Albert Lea
Nelson, Clayton E. J. ..... Albert Lea
§Nesheim, M. O. ..... Emmons
Palmer, C. F. ..... Albert Lea
§Palmerton, E. S. ..... Albert Lea
§Person, J. P. ..... Albert Lea
Prins, L. R. ..... Albert Lea
§Schultz, J. A. ..... Albert Lea
§Swanson, R. R. ..... Albert Lea
§Whitson, S. A. ..... Albert Lea

GOODHUE COUNTY MEDICAL SOCIETY

Regular meetings, none
Annual meeting, December
Number of Members: 26

President
Flom, M. G. ..... Zumbrota

Secretary
§Brusegard, J. F. ..... Red Wing

Aanes, A. M. ..... Red Wing
§Akins, W. M. ..... Red Wing
Anderson, S. H. ..... Red Wing
Bagby, G. W. ..... Cannon Falls
§Brusegard, J. F. ..... Red Wing
§Claydon, H. F. ..... Red Wing
§†Claydon, L. E. ..... Red Wing
Flom, M. G. ..... Zumbrota
§Graves, R. B. ..... Red Wing
§Hartnagel, G. F. ..... Red Wing
§Hedin, R. F. ..... Red Wing
Johnson, A. E. ..... Red Wing
†Jones, A. W. ..... Red Wing
§Juers, E. H. ..... Red Wing
§Kimmel, G. C. ..... Red Wing
§Liffrig, W. W. ..... Red Wing
Mack, J. J. ..... Little Rock, Ark.
Maertz, R. W. ..... Goodhue
§McGuigan, H. T. ..... Red Wing
Odessky, Louis ..... New York
Reitman, J. H. ..... Hastings
§Sherman, R. V. ..... Red Wing
†Smith, M. W. ..... Red Wing
§Steffens, L. A. ..... Red Wing
§Williams, M. R. ..... Cannon Falls
Youngstrom, C. S. ..... Ortonville

HENNEPIN COUNTY MEDICAL SOCIETY

Regular meetings, first Monday each month, October through May
Annual meeting, October
Number of Members: 762

President
Creighton, Ralph H. ..... Minneapolis

Secretary
Aling, Chas. A. ..... Minneapolis

Executive Secretary
Mrs. Flora H. Hancock ... Minneapolis

§Aagaard, G. N., Jr. ..... Minneapolis
§Abramson, Milton ..... Minneapolis
Adkins, C. D. ..... Minneapolis
Ahern, E. F. ..... Minneapolis
Alexander, H. A. ..... Minneapolis
Alger, E. W. ..... Minneapolis
§Aling, C. A. ..... Minneapolis
*§†Aling, C. P. ..... Minneapolis
*†Allen, H. W. ..... Minneapolis
Altman, R. F. ..... Minneapolis
§Altnow, H. O. ..... Minneapolis
*§Anderson, A. G. ..... Minneapolis
§Andersen, S. C. ..... Minneapolis
§Anderson, D. D. ..... Minneapolis
§Anderson, E. D. ..... Minneapolis
§Anderson, E. R. ..... Minneapolis
§Anderson, F. J. ..... Minneapolis
§Anderson, J. K. ..... Minneapolis
§Anderson, K. W. ..... Minneapolis
Anderson, M. C. ..... Minneapolis
§Anderson, U. S. ..... Minneapolis
Andersen, W. T. ..... Minneapolis
Andreassen, E. C. ..... Minneapolis
Andresen, K. D. ..... Minneapolis
§Andrews, R. S. ..... Minneapolis
§Arey, S. L. ..... Minneapolis
§Arlander, C. E. ..... Minneapolis
§Arling, L. S. ..... Minneapolis
Arnold, Ann W. ..... Minneapolis
Arnold, D. C. ..... Minneapolis
§Arvidson, C. G. ..... Minneapolis
§Aune, Martin ..... Minneapolis
†Aurand, W. H. ..... Minneapolis
§Baird, J. W. ..... Minneapolis
§Baken, M. P. ..... Minneapolis
Baker, A. B. ..... Minneapolis
Baker, A. T. ..... Minneapolis
§Baker, E. L. ..... Minneapolis
†Baker, Looe ..... Minneapolis
§Balkin, S. G. ..... Minneapolis
Bank, H. E. ..... Portland, Oregon
†Barber, J. P. ..... Minneapolis
Barr, R. N. ..... Minneapolis
§Barron, Moses ..... Minneapolis
Bateman, Olive A. L. ..... Rochester
§†Baxter, S. H. ..... Minneapolis
§Bayard, H. F. ..... Minneapolis
§Beach, Northrop ..... Minneapolis
†Beard, A. H. ..... Minneapolis
†Beckman, W. G. ..... San Francisco, Calif.
§Bedford, E. W. ..... Minneapolis
§Beiswanger, R. H. ..... Minneapolis
†Bell, E. T. ..... Minneapolis
Bellville, T. P. ..... Minneapolis
Belzer, M. S. ..... Minneapolis
Benesh, L. A. ..... Minneapolis
*Benesh, N. G. ..... Minneapolis
§Benjamin, A. E. ..... Minneapolis
§Benjamin, E. G. ..... Minneapolis
§Benjamin, H. G. ..... Minneapolis
§Benn, F. G. ..... Minneapolis
Berger, A. G. ..... Minneapolis
§Bergh, G. S. ..... Minneapolis
Bergh, Solveig M. ..... Minneapolis
§Berkwitz, N. J. ..... Minneapolis
Berman, Reuben ..... Minneapolis
§Bessesen, A. N., Jr. ..... Minneapolis
§Bessesen, D. H. ..... Minneapolis
Bessesen, W. A. ..... Minneapolis
Bieter, R. N. ..... Minneapolis
Blake, Alan ..... Hopkins
§Blake, J. A. ..... Hopkins
§Blake, James ..... Hopkins
†Blake, P. S. ..... Minneapolis
§Bloedel, T. J. ..... Osseo
Blumenthal, J. S. ..... Minneapolis
Bockman, M. W. H. ..... Minneapolis
§Boehrer, J. J. ..... Minneapolis
§Boies, L. R. ..... Minneapolis
§†Booth, A. E. ..... Minneapolis
§Boreen, C. A. ..... Minneapolis
Borgeson, E. J. ..... Minneapolis
§Borman, C. N. ..... Minneapolis
†Borowicz, L. A. ..... Minneapolis
§Bowers, G. G. ..... Minneapolis
Boynton, Ruth E. ..... Minneapolis
§Bratrud, A. F. ..... Minneapolis
§Brekke, H. J. ..... Minneapolis
Brill, Alice K. ..... Minneapolis
Brooks, C. N. ..... Minneapolis
†Brown, E. D. ..... Paynesville
Brown, F. J. ..... Minneapolis
§Brown, J. R. ..... Minneapolis
†Brown, S. P. ..... Minneapolis
Brown, W. D. ..... Minneapolis
Brutsch, G. C. ..... Minneapolis
§Buchstein, H. F. ..... Minneapolis
§Buirge, Raymond ..... Minneapolis
Bulkley, Kenneth ..... Minneapolis
Burnham, W. H. ..... Minneapolis
Bushard, W. J. ..... Minneapolis
§Buzzelle, L. K. ..... Minneapolis
§Cable, M. I. ..... Minneapolis
§Cabot, C. M. ..... Minneapolis
§Cabot, V. S. ..... Minneapolis
Cady, L. H. ..... Minneapolis
Callerstrom, G. W. ..... Minneapolis
Cameron, Isabell L. ..... Minneapolis
Camp, W. E. ..... Minneapolis
Campbell, L. M. ..... Minneapolis
§Campbell, O. J. ..... Minneapolis
§Cardle, A. E. ..... Minneapolis

§Carey, J. B. ..... Minneapolis
§Carlson, Lawrence ..... Minneapolis
§Carlson, L. T. ..... Minneapolis
§Caron, R. P. ..... Minneapolis
Carter, H. Gray ..... Minneapolis
Caspers, C. G. ..... Minneapolis
§Cavanor, F. T. ..... Minneapolis
§Ceder, E. T. ..... Minneapolis
Challman, S. A. ..... Minneapolis
Chapman, C. B. ..... Minneapolis
Chesley, A. J. ..... Minneapolis
Chisholm, T. D. ..... Minneapolis
§Christenson, G. R. ..... Minneapolis
§Christianson, H. W. ..... Minneapolis
Clarke, E. K. ..... Minneapolis
§Clay, L. B. ..... Minneapolis
Cochrane, R. F. ..... Minneapolis
Cohen, B. A. ..... Minneapolis
§Cohen, S. S. ..... Oak Terrace
Colp, E. A. ..... Robbinsdale
Condit, W. H. ..... Minneapolis
Cooper, J. D. ..... Wayzata
§Corbett, J. F. ..... Minneapolis
Corniea, A. D. ..... Minneapolis
§Correa, D. H. ..... Minneapolis
Cowan, D. W. ..... Minneapolis
§Cranmer, R. R. ..... Minneapolis
†Cranston, R. W. ..... Minneapolis
§Creevy, C. D. ..... Minneapolis
§Creighton, R. H. ..... Minneapolis
§Culligan, L. C. ..... Minneapolis
§Culmer, C. U. ..... Minneapolis
Cumming, H. A. ..... Minneapolis
Cutts, George ..... Minneapolis
Dady, E. E. ..... Minneapolis
§Dahl, E. O. ..... Minneapolis
§Dahl, J. A. ..... Minneapolis
§Daniel, D. H. ..... Minneapolis
§Dargay, C. P. ..... Minneapolis
§Davis, J. C. ..... Minneapolis
§Davis, W. I. ..... Mound
§del Plaine, C. W. ..... Minneapolis
Dennis, Clarence ..... Minneapolis
§Devereaux, T. J. ..... Wayzata
§Diehl, H. S. ..... Minneapolis
Diessner, H. D. ..... Minneapolis
§Dorge, R. I. ..... Minneapolis
§Dornblaser, H. B. ..... Minneapolis
§Dorsey, G. C. ..... Minneapolis
Dowidat, R. W. ..... Minneapolis
Doxey, G. L. ..... Minneapolis
§Doyle, L. O. ..... Minneapolis
§Drake, C. R. ..... Minneapolis
§Drill, H. E. ..... Hopkins
§Duff, E. R. ..... Minneapolis
§Dukelow, D. A. ..... Minneapolis
†Dumas, A. G. ..... Minneapolis
§Dunlap, E. H. ..... Minneapolis
§Dunn, G. R. ..... Minneapolis
§Dupont, J. A. ..... Excelsior
§Duryea, W. M. ..... Minneapolis
†Dutton, C. E. ..... Minneapolis
§Dvorak, B. A. ..... Minneapolis
§Dwan, P. F. ..... Minneapolis
§Dworsky, S. D. ..... Minneapolis
Ebert, R. V. ..... Minneapolis
Eckles, Nylene ..... Minneapolis
§Ehrenberg, C. J. ..... Minneapolis
§Ehrlich, S. P. ..... Minneapolis
§Eich, Matthew ..... Minneapolis
Eisenstadt, D. H. ..... Minneapolis
Eisenstadt, W. S. ..... Minneapolis
§Eitel, G. D. ..... Minneapolis
§Ellison, D. E. ..... Minneapolis
§Engelhart, P. C. ..... Minneapolis
Englund, E. F. ..... Minneapolis
§Engstrand, O. J. ..... Minneapolis
§Erickson, C. O. ..... Minneapolis
§Erickson, R. F. ..... Minneapolis
§Ericson, R. M. ..... Minneapolis
§Evans, E. T. ..... Minneapolis
Evans, R. D. ..... Minneapolis
Fahr, G. E. ..... Minneapolis
§Fansler, W. A. ..... Minneapolis
†Farsht, I. J. ..... Minneapolis
†Farkas, J. V. ..... Minneapolis
Feeney, J. M. ..... Minneapolis
§Feinstein, J. Y. ..... Minneapolis
Fenger, E. P. K. ..... Oak Terrace
*Fetterly, Warren ..... Minneapolis
Fingerman, D. L. ..... Minneapolis
§Fink, L. W. ..... Minneapolis
§Fink, W. H. ..... Minneapolis
†Fitzgerald, D. F. ..... Minneapolis
§Fjelstad, C. A. ..... Minneapolis
§Fleeson, W. H. ..... Minneapolis
Fleming, D. S. ..... Minneapolis
§Foker, L. W. ..... Minneapolis
Folsom, L. B. ..... Minneapolis
§Ford, W. H. ..... Minneapolis
Foster, W. K. ..... Minneapolis
§Fowler, L. H. ..... Minneapolis
§Fox, J. R. ..... Minneapolis
Frane, D. B. ..... Minneapolis
Frank, W. L., Jr. ..... Minneapolis
Frear, Rosemary R. ..... Minneapolis
§Fredericks, G. M. ..... Minneapolis
§Fredlund, M. L. ..... Minneapolis
§French, L. O. ..... Minneapolis
§Fried, L. A. ..... Minneapolis
§Friedell, Aaron ..... Minneapolis
§Frost, J. B. ..... Minneapolis
Frykman, H. M. ..... Minneapolis
Fuller, Alice H. ..... Minneapolis
§Funk, V. K. ..... Oak Terrace
Galligan, Margaret M. D. ..... Minneapolis
§Galloway, J. B. ..... Minneapolis
§Gammell, J. H. ..... Minneapolis
Garten, J. L. ..... Minneapolis
§Gibbs, R. W. ..... Minneapolis
§Giebenhaan, J. N. ..... Minneapolis
§Giere, J. C. ..... Minneapolis
§Giere, R. W. ..... Minneapolis
†Giessler, P. W. ..... Minneapolis
Gilbert, M. G. ..... Minneapolis
Gingold, B. A. ..... Minneapolis
§Girvin, R. B. ..... Minneapolis
§Goldberg, L. M. ..... Minneapolis
§Goldman, T. I. ..... Minneapolis
Goldner, M. Z. ..... Minneapolis
§Good, H. D. ..... Minneapolis
Gordon, P. E. ..... Minneapolis
§Gratzek, F. R. ..... Minneapolis
§Grave, Floyd ..... Minneapolis
Gray, R. C. ..... Minneapolis
*Green, R. G. ..... Minneapolis
Grimes, Marian ..... Minneapolis
§Gronvall, P. R. ..... Minneapolis
§Groskloss, H. H. ..... Minneapolis
§Gushurst, E. G. ..... Minneapolis
§Gustason, H. T. ..... Minneapolis
Haberer, Helen R. ..... Minneapolis
Hagen, P. S. ..... Minneapolis
§Hagen, W. S. ..... Minneapolis
†Haggard, G. D. ..... Minneapolis
§Hall, H. B. ..... Minneapolis
Hall, W. H. ..... Minneapolis
Hallberg, C. A. ..... Minneapolis
§Hamlin, G. B. ..... Minneapolis
§†Hammerstad, L. M. ..... Minneapolis
Hammond, A. J. ..... Minneapolis
§Hannah, H. B. ..... Minneapolis
§Hansen, C. O. ..... Minneapolis
§Hansen, E. W. ..... Minneapolis
Hansen, Olga S. ..... Minneapolis
§Hanson, H. J. ..... Minneapolis
Hanson, H. V. ..... Minneapolis
§Hanson, M. B. ..... Minneapolis
§Hanson, W. A. ..... Minneapolis
§Happe, L. J. ..... Minneapolis
Harris, Evelyn S. ..... Minneapolis
§Hart, V. L. ..... Minneapolis
§Hartig, Hermina ..... Minneapolis
§†Hartzell, T. B. ..... Minneapolis
§Haserick, John R. ..... Minneapolis
§Hastings, D. R. ..... Minneapolis
§Hastings, D. W. ..... Minneapolis
§Hauge, E. T. ..... Minneapolis
Haugen, J. A. ..... Minneapolis
§Haven, W. K. ..... Minneapolis
§Hawkinson, R. P. ..... Minneapolis
§Hayes, J. M. ..... Minneapolis
§‡Hays, A. T. ..... Minneapolis
§Head, D. P. ..... Minneapolis
†§Head, G. D. ..... Minneapolis
†Hedbeck, A. E. ..... Minneapolis
§Heim, R. R. ..... Minneapolis
†Hendrickson, J. F. ..... Minneapolis
§Henrikson, E. C. ..... Minneapolis
†Henry, C. E. ..... Kirksville, Mo.
Henry, M. O. ..... Minneapolis
Herbert, W. L. ..... Minneapolis
Hertzog, A. J. ..... Minneapolis
Hesdorffer, M. B. ..... Minneapolis
§Higgins, J. H. ..... Minneapolis
Hill, E. M. ..... Minneapolis
§Hillis, S. J. ..... Minneapolis
Hinckley, R. G. ..... Minneapolis
§Hirshfield, F. R. ..... Minneapolis
Hitchcock, C. R. ..... Minneapolis
†Hoaglund, A. W. ..... Santa Monica, Calif.
§Hodge, S. V. ..... Minneapolis
†Hoffbauer, F. W. ..... Minneapolis
§Hoffert, H. E. ..... Minneapolis
§Hoffman, R. A. ..... Minneapolis
§Hoffman, W. L. ..... Minneapolis
§Holmberg, C. J. ..... Minneapolis
Holzapfel, F. C. ..... Minneapolis
§Horns, R. C. ..... Minneapolis
Hovland, M. L. ..... Minneapolis
§Howard, S. E. ..... Minneapolis
Hudson, G. E. ..... Minneapolis
§Huenekens, E. J. ..... Minneapolis
§Hultkrans, J. C. ..... Minneapolis
Hultkrans, R. E. ..... Minneapolis
†Hurd, Annah ..... Minneapolis
§Hutchinson, C. J. ..... Minneapolis
Hutchinson, D. W. ..... Oak Terrace
§Hymes, Charles ..... Minneapolis
Hynes, J. E. ..... Minneapolis
Irvine, H. G. ..... Minneapolis
§Iverson, R. M. ..... Minneapolis
James, E. M. ..... Minneapolis
§Jensen, Harry ..... Minneapolis
§†Jensen, M. J. ..... Minneapolis
Jensen, N. K. ..... Minneapolis
Jensen, R. A. ..... Minneapolis
†Jerome, Bourne ..... Minneapolis
§Johnson, A. B. ..... Minneapolis
Johnson, A. E. ..... Minneapolis
Johnson, Evelyn V. ..... Minneapolis
§Johnson, E. W. ..... Minneapolis
§Johnson, H. A. ..... Minneapolis
§Johnson, J. A. ..... Minneapolis
†Johnson, J. W. ..... Minneapolis
§Johnson, Julius ..... Minneapolis
§Johnson, M. R. ..... Minneapolis
†Johnson, N. A. ..... Santa Monica, Calif.
Johnson, Norman ..... Minneapolis
Johnson, N. T. ..... Minneapolis
Johnson, R. A. ..... Minneapolis
‡Johnson, Raymond A. ..... Minneapolis
§Johnson, R. E. ..... Minneapolis
Johnson, R. G. ..... Minneapolis
§Johnson, Y. T. ..... Minneapolis
Jones, H. W., Jr. ..... Minneapolis
§Jones, W. R. ..... Minneapolis
Josewich, Alexander ..... Minneapolis
§Judd, W. H. ..... Washington, D. C.
§Jurdy, M. J. ..... Minneapolis
Kabler, P. W. ..... Minneapolis
Kalin, O. T. ..... Minneapolis
§Kaplan, J. J. ..... Minneapolis
§Karleen, C. I. ..... Minneapolis
Karlstrom, A. E. ..... Minneapolis
§Kaufman, H. J. ..... Minneapolis
§Kelby, G. M. ..... Minneapolis
Kelly, J. P. ..... Minneapolis
§Kennedy, C. C. ..... Minneapolis
†Kennedy, Jane F. ..... Minneapolis
§Kerkhof, A. C. ..... Minneapolis
Kertesz, G. ..... Minneapolis
†King, E. A. ..... Minneapolis
King, F. W. ..... Oak Terrace
§Kinsella, T. J. ..... Minneapolis
§Kistler, A. J. ..... Minneapolis
*§Kistler, C. M. ..... Minneapolis
§Knapp, M. E. ..... Minneapolis
Knight, R. R. ..... Minneapolis
§Knight, R. T. ..... Minneapolis
§Koepcke, G. M. ..... Minneapolis
Koller, H. M. ..... Minneapolis
Koller, L. R. ..... Minneapolis
Korchik, J. P. ..... Minneapolis
Kottke, F. J. ..... Minneapolis
§Koucky, R. W. ..... Minneapolis
Kremen, A. J. ..... Minneapolis
§Kremen, I. C. ..... Minneapolis
Kucera, F. J. ..... Hopkins
§Kucera, W. J. ..... Minneapolis
Lagaard, S. M. ..... Minneapolis
Lajoie, J. M. ..... Minneapolis
§Lang, L. A. ..... Minneapolis
§Lapierre, A. P. ..... Minneapolis
§Lapierre, J. T. ..... Minneapolis
Larsen, F. W. ..... Minneapolis
§Larson, C. M. ..... Minneapolis
Larson, E. A. ..... Minneapolis
§Larson, Lawrence M. ..... Minneapolis
§Larson, L. M. ..... Oak Terrace
§Larson, P. N. ..... Minneapolis
Larson, R. H. ..... Anoka
§La Vake, R. T. ..... Minneapolis
§Law, S. G. ..... Minneapolis
§Laymon, C. W. ..... Minneapolis
†Leavitt, H. H. ..... Minneapolis
Lebowske, J. A. ..... Minneapolis
Lee, H. M. ..... Minneapolis
§Leland, H. R. ..... Minneapolis
§Lenz, O. A. ..... Minneapolis
§Leonard, L. J. ..... Minneapolis
§Leonard, Sam ..... Minneapolis
§Lerner, A. Ross ..... Minneapolis
Lillehei, E. J. ..... Robbinsdale
‡Lind, C. J. Jr., ... Minneapolis
Lind, C. J. ..... Minneapolis
Lindberg, A. C. ..... Minneapolis
§Lindberg, V. L. ..... Minneapolis
§Lindbloom, A. E. ..... Minneapolis
§Lindgren, R. C. ..... Minneapolis
§Lindquist, R. H. ..... Minneapolis
§Linner, H. P. ..... Minneapolis
Linner, J. H. ..... Minneapolis
Lippman, E. S. ..... Minneapolis
§Lipschultz, Oscar ..... Minneapolis
Lister, K. E. ..... Minneapolis
§Litchfield, J. T. ..... Minneapolis
Litman, A. B. ..... Minneapolis
§†Litzenberg, J. C. ..... Minneapolis
Llewellyn, M. B. ..... Minneapolis
§Lofsness, S. V. ..... Minneapolis
§Logefeil, R. C. ..... Minneapolis
§Loomis, E. A. ..... Minneapolis

Lovett, Beatrice R.....Oak Terrace
Lowry, Elizabeth C.....Minneapolis
Lowry, Thomas.....Minneapolis
§Lufkin, N. H.....Minneapolis
Lundberg, Ruth I.....Minneapolis
Lundblad, R. A.....Minneapolis
Lundblad, S. W.....Minneapolis
§Lundgren, A. C.....Minneapolis
§Lundquist, E. F.....Minneapolis
§Lynch, M. J.....Minneapolis
Lysne, Henry .....Minneapolis
§Lysne, Myron.....Minneapolis

†MacDonald, A. E.....Minneapolis
§MacDonald, D. A.....Minneapolis
§Mach, F. B.....Minneapolis
§MacKinnon, D. C.....Minneapolis
§MacMillan, D. G.....Minneapolis
Macnie, J. S.....Minneapolis
§Maeder, E. C.....Minneapolis
§Maland, C. O.....Minneapolis
§Mariette, E. S.....Oak Terrace
§Mark, D. B.....Minneapolis
§Marking, G. H.....Minneapolis
Martinson, C. J.....Wayzata
†Martinson, E. J.....Wayzata
†Matchan, G. R.....Minneapolis
§Mattill, P. M.....Oak Terrace
§Mattson, Hamlin.....Minneapolis
§Maxeiner, S. R.....Minneapolis
§†McCaffrey, F. J.....Minneapolis
McCann, E. J.....Minneapolis
McCarthy, Donald.....Minneapolis
McCartney, J. S.....Minneapolis
‡McCrimmon, H. P.....Minneapolis
†McDaniel, Orianna.....Minneapolis
†McFarland, A. H.....Minneapolis
§McGandy, R. F.....Minneapolis
§McGeary, G. E.....Minneapolis
§McInerny, M. W.....Minneapolis
McKelvey, J. L.....Minneapolis
§McKenzie, C. H.....Minneapolis
§McKinlay, C. A.....Minneapolis
§McKinley, J. C.....Minneapolis
§McKinney, F. S.....Minneapolis
McMurtrie, W. B.....Minneapolis
§McPheeters, H. O.....Minneapolis
†McQuarrie, Irvine.....Minneapolis
Meller, R. L.....Minneapolis
§Merkert, C. E.....Minneapolis
§Merkert, G. L.....Minneapolis
†Merrick, Charlotte T.....Minneapolis
†Merrill, Elizabeth.....Minneapolis
§Meyer, A. J.....Minneapolis
§Meyer, E. L.....Minneapolis
Michael, J. C.....Minneapolis
Michel, H. H.....Minneapolis
§Michelson, H. E.....Minneapolis
†Mickelsen, Emma F.....Minneapolis
§Miller, Harold E.....Minneapolis
Miller, Hugo E.....Minneapolis
§Miller, J. C.....Minneapolis
§Milton, J. S.....Minneapolis
§Minsky, A. A.....Minneapolis
§Mitchell, B. D.....Minneapolis
Mitchell, E. C.....Mound
Mitchell, M. E.....Minneapolis
§Mitchell, M. T.....Minneapolis
Mixer, Harry W. .....Minneapolis
§Moe, J. H.....Minneapolis
§Moehn, J. T.....Minneapolis
§Moen, J. K.....Minneapolis
†Monahan, E. S. .....Minneapolis
§Monson, E. M.....Minneapolis
§Moos, D. J.....Minneapolis
Moren, Edward.....Minneapolis
§Mork, A. H. .....Anoka
§Mork, F. E. .....Anoka
Morrison, A. W.....Minneapolis
Morrison, Charlotte J.....Minneapolis
§Morse, R. W.....Minneapolis
§Murphy, E. P.....Minneapolis
§Murphy, I. J.....Minneapolis
†Musty, N. J.....Minneapolis
§Myers, J. A.....Minneapolis

§Naslund, A. W.....Minneapolis
§Neal, J. M.....Minneapolis
Neary, R. P.....Minneapolis
§Nelson, E. N.....Minneapolis
†Nelson, H. S.....Los Angeles, Calif.
§Nelson, M. C.....Minneapolis
§Nelson, N. Harvey.....Minneapolis
§Nelson, O. L. N.....Minneapolis
§Nelson, W. I. .....Minneapolis
§Nesbitt, Samuel.....Minneapolis
Nesset, L. B.....Marshall
Noonan, W. J.....Minneapolis
§Nord, Robert E.....Minneapolis
Noran, A. S. N.....Minneapolis
§Noran, Harold H.....Minneapolis
§Nordin, G. T.....Minneapolis
§Nordland, Martin.....Minneapolis
§†Noth, H. W.....Minneapolis
§Nydahl, M. J.....Minneapolis

§Nylander, E. G.....Minneapolis
Nystrom, Ruth G.....Minneapolis
§Oberg, C. M.....Minneapolis
*†O'Brien, W. A.....Minneapolis
O'Donnell, J. E.....Minneapolis
§Olsen, E. G.....Minneapolis
§Olson, A. C.....Minneapolis
Olson, J. W.....Minneapolis
†Olson, O. A.....Minneapolis
*†§Olson, R. G. .....Minneapolis
§Oppen, E. G.....Minneapolis
†Owre, Oscar .....Minneapolis
Palen, B. J.....Minneapolis
§Peppard, T. A.....Minneapolis
Perlman, E. C.....Minneapolis
§†Petersen, J. R.....Minneapolis
Peterson, H. W.....Minneapolis
§Peterson, J. J.....Minneapolis
Peterson, N. P.....Minneapolis
Peterson, O. H.....Minneapolis
§Peterson, P. E.....Minneapolis
§Peterson, W. C.....Minneapolis
Peterson, W. H. .....Minneapolis
§Petit, J. V.....Minneapolis
§Petit, L. J.....Minneapolis
Pewters, J. T.....Minneapolis
Peyton, W. T.....Minneapolis
§Pfunder, M. C.....Minneapolis
§Phelps, K. A.....Minneapolis
Plass, H. F. R.....Minneapolis
§Platou, E. S.....Minneapolis
§Pleissner, K. W.....St. Louis Park
§Plimpton, N. C.....Minneapolis
§Pohl, J. F.....Minneapolis
§Pollard, D. W.....Minneapolis
§Pollock, D. K.....Minneapolis
§Polzak, J. A.....Minneapolis
Poppe, F. H.....Minneapolis
§Potter, R. B.....Minneapolis
Pratt, F. J., Jr. .....Minneapolis
Pratt, F. J., Sr. .....Minneapolis
§Preine, I. A.....Minneapolis
Preston, P. J.....Minneapolis
Priest, R. E.....Minneapolis
§†Prim, J. A.....Minneapolis
Proffitt, W. E.....Minneapolis
§Proshek, C. E.....Minneapolis

§Quello, R. O. B.....Minneapolis
§Quist, H. W.....Minneapolis
Quist, H. W., Jr. .....Minneapolis

§Ransom, H. R.....Osseo
Reader, D. R.....Minneapolis
§Regan, J. J.....Minneapolis
§Regnier, E. A.....Minneapolis
Reid, L. M.....Excelsior
§Reif, H. A.....Minneapolis
§Reiley, R. E.....Minneapolis
§Reynolds, J. S.....Minneapolis
§Rice, C. O.....Minneapolis
§Richdorf, L. F.....Minneapolis
§Rieke, W. W.....Wayzata
Rigler, L. G.....Minneapolis
Riordan, Elsie M.....Minneapolis
§Risch, R. E.....Minneapolis
Rizer, D. K.....Minneapolis
Rizer, R. I.....Minneapolis
§Roan, O. M.....Minneapolis
Robb, E. F.....Minneapolis
§Robbins, O. F.....Minneapolis
Roberts, L. J.....Minneapolis
Roberts, S. W.....Minneapolis
§Roberts, W. B.....Minneapolis
*Robitshek, E. C.....Minneapolis
§Rodda, F. C.....Minneapolis
§Rodgers, C. L.....Minneapolis
§Rodgers, R. S.....Minneapolis
Rosendahl, F. G. .....Minneapolis
§Rosenfield, A. B.....Minneapolis
§Rosenwald, R. M.....Minneapolis
Roskilly, G. C. P.....Minneapolis
§Ross, A. V.....Minneapolis
§Rucker, W. H.....Minneapolis
Rud, N. E.....Minneapolis
Rudell, G. L.....Minneapolis
§Russeth, A. N.....Minneapolis
§Rusten, E. M.....Minneapolis
Ryding, V. T.....Howard Lake

§Sadler, W. P.....Minneapolis
St. Cyr, K. I.....Robbinsdale
§Saliterman, B. I.....Minneapolis
Samuelson, Samuel.....Minneapolis
§Sandt, K. E.....Minneapolis
§Sawatzky, W. A.....Minneapolis
§Schaaf, F. H. K.....Minneapolis
§Schaefer, W. G.....Minneapolis
†Scheldrup, N. H.....Minneapolis
§Scherer, L. R.....Minneapolis
Schiele, B. C.....Minneapolis
§Schmidt, G. F.....Minneapolis
*†Schmitt, A. F. .....Minneapolis
†Schmitt, S. C.....Los Angeles, Calif.
†Schneider, J. P.....Minneapolis
Schneider, R. A. .....Minneapolis
†Schneidman, N. R.....Minneapolis

Schottler, M. E.....Minneapolis
§Schultz, J. H. .....Minneapolis
§Schultz, P. J. .....Minneapolis
†Schussler, O. F.....Minneapolis
§Schwartz, V. J.....Minneapolis
†Schwyzer, Gustav.....Minneapolis
†Scott, F. H.....Minneapolis
†Scott, H. G.....Minneapolis
§Seaberg, J. A.....Minneapolis
§†Seashore, Gilbert.....Minneapolis
Seham, Max.....Minneapolis
§Seifert, M. H.....Excelsior
§Seljeskog, S. R. .....Minneapolis
§Shandorf, J. F.....Minneapolis
Shaperman, Eva P.....Minneapolis
§Shapiro, M. J.....Minneapolis
Sharp, D. V.....Minneapolis
§Shea, A. W.....Minneapolis
Sher, Louis .....Minneapolis
§Siegmann, W. C.....Minneapolis
Silver, J. D.....Minneapolis
§†Simons, J. H.....Minneapolis
Simonson, D. B.....Minneapolis
§Simpson, E. D.....Minneapolis
Sinykin, M. B.....Minneapolis
Siperstein, D. M.....Minneapolis
†Sivertsen, Andrew.....Mound
§Sivertsen, Ivar.....Minneapolis
§Skjold, A. C.....Minneapolis
§Smisek, F. M. .....Minneapolis
Smith, Adam M.....Minneapolis
§Smith, Archie M.....Minneapolis
Smith, B. A., Jr.....Minneapolis
Smith, H. R.....Minneapolis
§Smith, N. M.....Minneapolis
Smith, N. R.....Minneapolis
Soderlind, R. T.....Minneapolis
§Solhaug, S. B.....Minneapolis
§Spano, J. P.....Minneapolis
§Spink, W. W.....Minneapolis
§Spratt, C. N.....Minneapolis
§Stahr, A. C.....Hopkins
§Stanford, C. E.....Minneapolis
State, David .....Minneapolis
Stein, K. E.....Lakeville
§Stelter, L. A.....Minneapolis
Stennes, J. L.....Minneapolis
Stenstrom, Annette T.....Minneapolis
§Stewart, R. I.....Minneapolis
§Stoesser, A. V.....Minneapolis
†Stomel, Joseph....Los Angeles, Calif.
†Strachauer, A. C.....Minneapolis
§Strom, G. W.....Minneapolis
Stromgren, D. T.....Minneapolis
§Stromme, W. B.....Minneapolis
Stone, S. P.....Minneapolis
§Strout, G. E.....Minneapolis
§Sturre, J. R.....Minneapolis
§Sukov, Marvin.....Minneapolis
Sullivan, R. M.....Minneapolis
Swanson, R. E.....Minneapolis
†Swanson, V. F. .....Minneapolis
§Sweetser, H. B., Jr.....Minneapolis
†Sweetser, H. B., Sr.....Minneapolis
§Sweetser, T. H.....Minneapolis
Sweitzer, S. E.....Minneapolis
§†Swendseen, C. G.....Minneapolis
§Tangen, G. M.....Minneapolis
Taylor, J. H.....Minneapolis
§Tenner, R. J.....Minneapolis
§Thomas, G. E.....Minneapolis
†Thomas, G. H.....Minneapolis
§Thompson, W. H.....Minneapolis
§Thysell, D. M.....Minneapolis
§†Tingdale, A. C.....Minneapolis
Tinkham, R. G. .....Minneapolis
Titrud, L. A.....Minneapolis
§Tobin, J. D.....Minneapolis
Todd, Romona L.....Minneapolis
§Trach, Benedict.....Minneapolis
§Trow, J. E.....Minneapolis
‡Trow, W. H.....Minneapolis
Troxil, Elizabeth B.....Minneapolis
Trueman, H. S.....Minneapolis
Tucker, W. B. .....Minneapolis
§Tudor, R. B.....Minneapolis
§Tunstead, H. J.....Minneapolis
§†Turnacliff, D. D. .....Minneapolis

§Ude, W. H.....Minneapolis
§Ulrich, H. L.....Minneapolis
§Undine, C. A.....Minneapolis

Vik, A. E.....Minneapolis

§Wahlquist, H. F.....Minneapolis
§Walch, A. E.....Minneapolis
§Waldron, C. W.....Minneapolis
Walker, S. A. .....Minneapolis
§Wall, C. R.....Minneapolis
§Walsh, F. M.....Minneapolis
Walsh, W. T.....Minneapolis
Wangensteen, O. H.....Minneapolis
Ward, P. A.....Minneapolis
§Watson, C. G.....Minneapolis
§Watson, C. J.....Minneapolis
Weaver, M. M.....Minneapolis

‖Webb, E. A.....Minneapolis
‖Webb, R. C.....Minneapolis
Werner, George.....Minneapolis
Werner, R. F.....Minneapolis
†West, Catharine C.....Minneapolis
‡Westphal, K. F.....Minneapolis
‖Wethall, A. G.....Minneapolis
Wetherby, Macnider.....Minneapolis
‖Weum, T. W.....Minneapolis
White, A. A.....Minneapolis
‖White, S. M.....Minneapolis
‖White, W. D.....Minneapolis
‖Whitesell, L. A.....Minneapolis
§Widen, W. F.....Minneapolis
Wilcox, A. E.....Minneapolis
§†Willcutt, C. E.....Phoenix, Ariz.
‡Wildebush, F. F.....Minneapolis
§Wilder, K. W.....Minneapolis
§Wilder, R. L.....Minneapolis
§Wilder, R. M., Jr.....Minneapolis
§Wilken, P. A.....Minneapolis
†Williams, Robert.....Carthage, Ill.
Winther, Nora M. C.....Minneapolis
Wipperman, F. F.....Minneapolis
§Witham, C. A.....Minneapolis
Wittich, F. W.....Minneapolis
Wolf, A. H.....Minneapolis
§Wohlrabe, A. A.....Minneapolis
*†Wright, C. D.....Minneapolis
§†Wright, S. G.....Minneapolis
Wright, W. S.....Minneapolis
Wyatt, O. S.....Minneapolis
Wynne, H. M. N.....Minneapolis
§Ylvisaker, R. S.....Minneapolis
§Yoerg, O. W.....Minneapolis
Zaworski, Leo A.....Minneapolis
Zierold, A. A.....Minneapolis
§Zinter, F. A.....Minneapolis
Ziskin, Thomas.....Minneapolis

KANDIYOHI-SWIFT-MEEKER COUNTY MEDICAL SOCIETY

Regular meetings, second Wednesday of month
Annual meeting, November
Number of Members: 42

President
Gilman, Lloyd .....Willmar

Secretary
Wilmot, H. E.....Litchfield

Anderson, R. E.....Willmar
Arnson, J. M.....Benson
Bosland, H. G.....Willmar
Branton, A. F. Chattanooga, Tennessee
§Branton, B. J. .....Willmar
Daignault, Oscar.....Benson
Danielson, K. A.....Litchfield
Danielson, Lennox.....Litchfield
Dille, D. E.....Litchfield
§Doswell, W. J. .....Kerkhoven
Eberley, T. S.....Benson
Fisher, J. M.....Willmar
Frederickson, Alice C.....Willmar
Frederickson, G. U. Y.....Willmar
Frisch, F. P.....Willmar
§Frost, E. H.....Willmar
Giere, S. W.....Benson
Gilman, L. C.....Willmar
Griffin, R. P. .....Benson
Hodapp, R. J.....Willmar
§Jacobs, D. L.....Willmar
§Jacobs, J. C. .....Willmar
Johnson, Hans.....Kerkhoven
Kaufman, E. J.....Appleton
Lindley, S. B.....Willmar
Mattson, Albert D.....Madison
Michels, R. P. .....Willmar
O'Connor, D. C.....Eden Valley
Penhall, F. W. .....Willmar
Peterson, Willard E.....Willmar
Porter, O. M.....Willmar
Proeschel, R. K.....Willmar
Ripple, R. J.....New London
Rygh, Harold N.....Atwater
†Scofield, C. L.....Benson
Solhaug, S. G., Jr., ...Appleton
Sellers, G. K.....Dassel
Solsem, F. N.....Ah-Gwah-Ching
Telford, V. J.....Litchfield
Tyler, S. H.....Raymond
Wilmot, C. A.....Litchfield
Wilmot, H. E.....Litchfield

LYON-LINCOLN COUNTY MEDICAL SOCIETY

Regular meetings, first Tuesday of month
Annual meeting, last Tuesday in October
Number of Members: 26

President
Thompson, C. O. .....Hendricks

Secretary
Workman, W. G.....Tracy

Akester, Ward.....Fergus Falls
Eckdale, J. E.....Marshall
Ferguson, W. C.....Walnut Grove
§Ford, B. C.....Marshall
Frank, J. E.....Marshall
Friedell, George.....Ivanhoe
Gray, F. D.....Marshall
Helferty, J. K.....Minneapolis
§Hermanson, P. E.....Hendricks
§Hoidale, A. D.....Tracy
Johnson, P. C.....Tyler
Kreuzer, T. C.....Marshall
Monson, L. J. .....Canby
Murphy, J. E.....Marshall
Purves, G. H.....Hendricks
Remsberg, R. R.....Tracy
†Robertson, J. B.....Minneapolis
†Sanderson, E. T. .....Alexandria
Sether, A. F.....Ruthton
Smith, L. A.....Balaton
Thompson, C. O.....Hendricks
Vadheim, A. L.....Tyler
§Valentine, W. H.....Tracy
Wolstan, S. D.....Minneota
Workman, W. G.....Tracy
Yaeger, W. W.....Marshall

McLEOD COUNTY MEDICAL SOCIETY

Regular meetings, second or third Wednesday of month
Annual meeting, January
Number of Members: 20

President
Gridley, John W. .....Glencoe

Secretary
Brink, Donald .....Hutchinson

Anderson, C. A. .....Winsted
Brink, D. M.....Hutchinson
Clement, J. B.....Lester Prairie
Goss, H. C.....Glencoe
Goss, Martha D.....Glencoe
Gridley, J. W. .....Glencoe
Holm, H. H.....Glencoe
Jensen, A. M.....Brownton
Kallestad, L. L.....Hutchinson
§Klima, W. W.....Stewart
Lippmann, E. W.....Hutchinson
McMahon, M. J.....Green Isle
Neumaier, Arthur.....Glencoe
Peterson, K. H.....Hutchinson
Sahr, W. G.....Hutchinson
Scholpp, O. W.....Hutchinson
Selmo, J. D.....Norwood
§Sheppard, C. G.....Hutchinson
Truesdale, C. W.....Glencoe
Trutna, T. J.....Silver Lake

MOWER COUNTY MEDICAL SOCIETY

Regular meeting, last Thursday of each month
Annual meeting, December
Number of Members: 26

President
Wright, R. R. .....Austin

Secretary
Rosenthal, F. H. .....Austin

‖Allen, H. B.....Austin
§Anderson, D. P., Jr. .....Austin
‖Barber, Tracy E.....Austin
‖Cronwell, B. J.....Austin
Fisch, H. M.....Austin
§Flanagan, L. G.....Austin
§Grise, W. B.....Austin
§Havens, J. G. W.....Austin
Hegge, O. H.....Austin
§Hegge, R. S.....Austin
Henslin, A. E.....Le Roy
Henslin, M. E. .....Cresco, Iowa
§Hertel, G. E.....Austin
§Leck, P. C.....Austin
§Lommen, P. A.....Austin
§McKenna, J. K.....Austin
Melzer, G. R.....Lyle
Morse, M. P.....Le Roy
§Robertson, P. A.....Austin
§Rosenthal, F. H.....Austin
Schneider, P. J.....Adams
§Schottler, G. J.....Dexter
§Sheedy, C. L.....Austin
Thomson, J. M. .....Minneapolis
§Wilson, F. C.....Austin
§Wright, R. R. .....Austin

NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

Regular meetings, every four months
Annual meeting, December
Number of Members: 26

President
Sjostrom, L. E. .....St. Peter

Secretary
Sherman, A. G. .....St. Peter

‖†Aitkens, H. B.....LeCenter
‖Covell, W. W.....St. Peter
‖Curtis, R. A.....LeCenter
‖Ericson, Swan.....Le Sueur
Freeman, G. H.....St. Peter
§Giroux, A. A. .....North Mankato
§Grimes, B. P.....St. Peter
Henry, M. R. .....St. Peter
§Hiniker, P. J.....Le Sueur
Holtan, Theodore.....Waterville
§Johnson, H. C.....North Mankato
Lanhoff, A. H.....St. Peter
§Larson, M. H.....Nicollet
§Lenander, M. E.....St. Peter
§Navratil, D. R.....Montgomery
§Nilson, H. J.....North Mankato
§Olmanson, E. G.....St. Peter
§Olson, D. C.....Gaylord
Rossen, R. X. .....St. Peter
Sherman, A. G. .....St. Peter
§Sjostrom, L. E. .....St. Peter
§Sonnesyn, N. N. .....Le Sueur
§Strathern, C. S.....St. Peter
§Strathern, F. P.....St. Peter
§Traxler, J. F.....Henderson
§Wohrabe, C. F. .....North Mankato

OLMSTED-HOUSTON-FILLMORE-DODGE COUNTY MEDICAL SOCIETY

Regular meetings, first Wednesday every odd month
Annual meeting, November
Number of Members: 655

President
Berkman, John M. ..... Rochester

Secretary
Carryer, H. M. ..... Rochester

Ackerman, R. F. ..... Rochester
§Adams, R. C. ..... Rochester
§Adson, A. W. ..... Rochester
§Affeldt, D. E. ..... Kasson
Ahern, G. S. ..... Rochester
§Ahlfs, J. J. ..... Caledonia
§Aldrich, C. A. ..... Rochester
Allen, C. S. ..... Rochester
Allen, E. V. ..... Rochester
Allen, H. E. ..... Rochester
§Alvarez, W. C. ..... Rochester
Amberg, Samuel ..... Rochester
Anderson, C. D. ..... Rochester
Anderson, H. A. ..... Rochester
Anderson, James ..... Rochester
Anderson, M. E., Jr. ..... Rochester
§Anderson, M. J. ..... Rochester
§Anderson, M. W. ..... Rochester
Anderson, R. E. ..... Rochester
Arnesen, John F. ..... Rochester
Arling, P. A. ..... Rochester
Ashburn, F. S. ..... Rochester
Ashley, W. F. ..... Rochester
§Baggenstoss, A. H. ..... Rochester
§Bailey, A. A. ..... Rochester
Bailey, J. A. ..... Rochester
Bailey, J. H., Jr., ... Rochester
§Bair, H. L. ..... Rochester
§Baker, G. S. ..... Rochester
§Baker, H. R. ..... Hayfield
§Baker, R. L. ..... Hayfield
§Balfour, D. C. ..... Rochester
Balfour, D. C., Jr. ..... Rochester
Balfour, W. M. ..... Rochester
§Banner, E. A. ..... Rochester
§Bargen, J. A. ..... Rochester
Barger, J. D. ..... Rochester
§Barker, N. W. ..... Rochester
§Barnes, A. R. ..... Rochester
Barnes, Ben C. ..... Rochester
Barr, M. N. ..... Rochester
Bateman, J. G. ..... Rochester
Bauer, E. L. ..... Rochester
§Bayrd, E. D. ..... Rochester
Beahrs, O. H. ..... Rochester
‡Bearzy, H. J. ..... Rochester
Beck, N. R. ..... Salt Lake City, Utah
Beeler, J. W. ..... Rochester
Belote, G. B. ..... Caledonia
§Benedict, W. L. ..... Rochester
Bennett, J. K. ..... Rochester
§Bennett, W. A. ..... Rochester
Bentson, J. H. ..... Rochester
§Berkman, D. M. ..... Rochester
Berkman, D. S. ..... Rochester
§Berkman, J. M. ..... Rochester
§Bickel, W. H. ..... Rochester
§Bigelow, C. E. ..... Dodge Center
Bilka, P. J. ..... Rochester
Biorn, C. L. ..... Rochester
Black, B. M. ..... Rochester
§Blackburn, C. M. ..... Rochester
‡Blaisdell, J. S. ..... Rochester
Blunt, C. P., III, ... Rochester
§Boothby, W. M. ..... Rochester
Botha, Eleanor ..... Rochester
§Bowing, H. H. ..... Rochester
Boylan, R. N. ..... Rochester
§Braasch, W. F. ..... Rochester
Braastad, F. W. ..... Rochester
Brady, J. A. ..... Rochester
Brandes, R. W. ..... Rochester
‡Breslow, Lester ..... Rochester
Briggs, Natalie M. ..... Wenatchee, Wash.
Brilhart, K. B. ..... Rochester
§Broders, A. C. ..... Rochester
Brooks, L. M. ..... Rochester
Brooksby, W. A. ..... Rochester
§Brown, A. E. ..... Rochester
Brown, G. E. ..... Rochester
§Brown, H. A. ..... Rochester
Brown, H. S. ..... Rochester
§Brown, P. W. ..... Rochester
Browning, W. H. ..... Rochester
Brownson, B. C. ..... Rochester
§Brunsting, L. A. ..... Rochester
Butler, D. B. ..... Rochester
Bryan, A. L. ..... Rochester
§Buie, Louis A. ..... Rochester
§Burchell, H. B. ..... Rochester
Bush, R. P. ..... Rochester
§Butt, H. R. ..... Rochester
§Cain, J. C. ..... Rochester
Callaghan, Mary ..... Canada
Cameron, J. M. ..... Rochester
§Camp, J. D. ..... Rochester
§Campbell, D. C. ..... Rochester
Carlander, L. W., Jr., ... Rochester
Carmona, M. G. ..... Rochester
Carpenter, R. E. ..... Rochester
Carr, D. T. ..... Rochester
§Carryer, H. M. ..... Rochester
Carter, J. W., Jr. ..... Rochester
Chapman, C. E. ..... Rochester
Chapman, J. P., Jr. ..... Rochester
Childs, D. S., Jr., ... Rochester
§Christensen, N. A. ..... Rochester
Christoferson, L. A. ..... Rochester
§Clagett, O. T. ..... Rochester
Clark, F. H. ..... Rochester
§Clark, L. W. ..... Spring Valley
Clarkson, W. R. ..... Rochester
Clifton, T. A. ..... Chatfield
Cluxton, H. E., Jr., ... Rochester
Collett, R. W. ..... Rochester
§Comfort, M. W. ..... Rochester
Conley, F. W. ..... Rochester
Connery, D. B. ..... Rochester
*§†Connor, H. M. ..... Rochester
§Cook, E. N. ..... Rochester
§Cooper, Talbert ..... Rochester
§Corbin, K. B. ..... Rochester
Corcoran, C. E. ..... Rochester
§Counseller, V. S. ..... Rochester
§Coventry, M. B. ..... Rochester
§Craig, W. McK. ..... Rochester
*†Crewe, J. E. ..... Rochester
Cromer, H. E., Jr., ... Rochester
Cronkite, A. E. ..... Rochester
Crowley, D. F., Jr. ..... Rochester
Crowley, James H. ..... Rochester
‡Dahleen, H. C. ..... Rochester
§Dahlin, D. C. ..... Rochester
Daniels, B. T. ..... Rochester
Daugherty, G. W. ..... Rochester
Daut, R. V. ..... Rochester
‡Davies, L. T. ..... Rochester
§Davis, A. C. ..... Rochester
Davis, G. D. ..... Rochester
Davis, I. G. ..... Rushford
‡Davis, R. M. ..... Miami, Fla.
Day, Lois A. ..... Rochester
§Dearing, W. H., Jr. ..... Rochester
Dederick, G. F., Jr., ... Rochester
‡DeForest, R. E. ..... Detroit, Michigan
DeLamater, E. D. ..... Rochester
§Desjardins, A. U. ..... Rochester
Deterling, R. A. ..... New York
§Devine, K. D. ..... Rochester
Devney, J. W. ..... Rochester
DeVoe, R. W. ..... Rochester
DeWeerd, J. H. ..... Rochester
Diessner, G. R. ..... Rochester
§Dixon, C. F. ..... Rochester
§Dockerty, M. B. ..... Rochester
Doehring, P. C., Jr., ... Vallejo, Calif.
Dolder, F. C. ..... Eyota
Donoghue, F. E. ..... Rochester
Dornberger, G. R. ..... Rochester
Douglas, J. M. ..... Rochester
Douglass, B. E. ..... Rochester
†Drake, F. A. ..... Lanesboro
Drips, Della G. ..... Rochester
Drumheller, J. F. ..... Rochester
§Dry, T. J. ..... Rochester
Duggan, A. D. ..... Rochester
Dunn, J. H. ..... Rochester
§DuShane, J. W. ..... Rochester
Earnest, Franklin ..... Rochester
§Eaton, L. M. ..... Rochester
Eckstam, E. E. ..... Rochester
Edwards, J. E. ..... Rochester
§Elkins, E. C. ..... Rochester
Ellingson, E. A. ..... Rochester
Elliott, J. A., Jr., ... Rochester
Elliott, R. B. ..... Oskaloosa, Iowa
Ellis, F. H. ..... Rochester
Ellison, A. B. C. ..... Rochester
§Emmett, J. L. ..... Rochester
Erb, H. R. ..... Rochester
§Erich, J. B. ..... Rochester
§Erickson, D. J. ..... Rochester
§Estes, J. E. ..... Rochester
§Eusterman, G. B. ..... Rochester
†Evarts, A. B. ..... Rochester
§Faber, J. E. ..... Rochester
Faber, W. M. ..... Rochester
Farber, E. M. ..... Rochester
§Faulconer, A., Jr. ..... Rochester
Fawcett, R. M. ..... Rochester
§Feldman, F. M. ..... Rochester
Ferguson, W. J. ..... Rochester
§Ferris, D. O. ..... Rochester
‡Ferris, H. A., Jr. ..... Rochester
§Figi, F. A. ..... Rochester
Fisher, R. G. ..... Rochester
Fisher, R. L. ..... Rochester
Fitzgibbons, R. J. ..... Rochester
§Flashman, F. L. ..... Rochester
Flautt, J. R., Jr., ... Rochester
Ford, J. L. ..... Rochester
Forney, R. A. ..... Rochester
Foss, E. L. ..... Rochester
‡Freeman, J. G. ..... Rochester
§Fricke, R. E. ..... Rochester
Fricke, R. W. ..... Rochester
*Gaarde, F. W. ..... Rochester
§Gaarde, F. W., Jr. ..... Rochester
§†Gambill, C. M. ..... Rochester
§Gambill, E. E. ..... Rochester
Gastineau, C. F. ..... Rochester
Gates, E. M. ..... Rochester
Gay, J. R. ..... Rochester
Geraci, J. E. ..... Rochester
§Ghormley, R. K. ..... Rochester
Gibson, R. H. ..... Rochester
§Giffin, H. Z. ..... Rochester
Giffin, Mary E. ..... Rochester
Glenn, W. V. ..... Rochester
Gogela, L. J. ..... Rochester
Golden, P. B. ..... Boston, Massachusetts
Gooch, J. O. ..... Rochester
§Good, C. A., Jr. ..... Rochester
Graham, F. M. ..... Rochester
Graham, R. J. ..... Rochester
Gramse, A. E. ..... Rochester
Gray, G. P. ..... Rochester
§Gray, H. K. ..... Rochester
Greene, L. F. ..... Rochester
Griffin, J. G. ..... Rochester
Griffith, E. R. ..... Rochester
§Grindlay, J. H. ..... Rochester
Groom, Dale ..... Rochester
Gross, J. B. ..... Rochester
Grotting, J. K. ..... Rochester
Guernsey, D. E. ..... Rochester
§Habein, H. C. ..... Rochester
§Hagedorn, A. B. ..... Rochester
Haines, R. D. ..... Rochester
§Haines, S. F. ..... Rochester
§Hall, B. E. ..... Rochester
§Hallberg, O. E. ..... Rochester
§Hallenbeck, D. F. ..... Rochester
§Hallenbeck, G. A. ..... Rochester
Hamilton, C. F. ..... Rochester
Hamm, R. S. ..... Rochester
Hanlon, D. G. ..... Rochester
Hanlon, G. H. ..... Rochester
§Hanson, N. O. ..... Rochester
§Hargraves, M. M. ..... Rochester
§Harrington, S. W. ..... Rochester
§Harris, L. E. ..... Rochester
Hart, G. M. ..... Rochester
§Hartman, H. R. ..... Rochester
Harvard, B. M. ..... Rochester
Harvey, George, Jr. ..... Rochester
Hasskarl, W. F., Jr. ..... Rochester
Hatcher, A. C. ..... Rochester
§Havens, F. Z. ..... Rochester
Hay, S. H. ..... Rochester
Hayles, A. B. ..... Rochester
Haynes, Allan ..... Rochester
Headley, N. E. ..... Rochester
§Heck, F. J. ..... Rochester
§Heersema, P. H. ..... Rochester
†Heilman, D. H. ..... Rochester
Heilman, F. R. ..... Rochester
Heinrich, W. A. ..... Rochester
†Helland, G. M. ..... Spring Grove
§Helland, J. W. ..... Spring Grove
§Helmholz, H. F. ..... Rochester
§Hempstead, B. E. ..... Rochester
§Hench, P. S. ..... Rochester
‡Henderson, E. D. ..... Rochester
§Henderson, J. W. ..... Rochester
Henderson, L. L. ..... Rochester
§Henderson, M. S. ..... Rochester
Henegar, G. C. ..... Rochester
Henkel, H. B. ..... Rochester
Herbst, R. F. ..... Wykoff
Hermann, H. W. ..... Caledonia
§Herrell, W. E. ..... Rochester
Hetherington, J. A. ..... Rochester
Hewitt, Edith S. ..... Rochester
†Hewitt, R. M. ..... Rochester
†Heyerdale, O. C. ..... Rochester
Heyerman, O. T. ..... Rochester
Hildebrand, C. H., Jr., ... Rochester
Hightower, N. C., Jr. ..... Rochester
§Hill, J. R. ..... Rochester
§Hines, E. A., Jr. ..... Rochester
§Hinshaw, H. C. ..... Rochester
§Hodgson, C. H. ..... Rochester
§Hodgson, J. R. ..... Rochester

Hogben, C. A. ..... Rochester
§Hollenhorst, R. W. ..... Rochester
Holman, C. B. ..... Rochester
Holt, R. P. ..... Rochester
Hoon, J. R. ..... Rochester
Hoppes, E. E. ..... Rochester
Horning, E. D. ..... Rochester
§Horton, B. T. ..... Rochester
§Howell, L. P. ..... Rochester
§Hunt, A. B. ..... Rochester
Hunt, V. W. ..... Rochester
‡Hurley, J. P. ..... Rochester
Irmisch, G. W. ..... Rochester
Ivins, J. C. ..... Rochester
§Jackman, R. J. ..... Rochester
Jackson, A. E. ..... Rochester
Jackson, H. S. ..... Rochester
§Janes, J. M. ..... Rochester
Jarrett, P. S. ..... Rochester
‡Jennings, D. T. ..... Rochester
Jensen, G. L. ..... Rochester
Johns, Sylvia ..... Rochester
Johnson, B. H., Jr. ..... Rochester
‡Johnson, C. C. ..... Rochester
Johnson, E. W. ..... Rochester
Johnson, H. A. ..... Rochester
Johnson, M. A. ..... Rochester
Johnson, R. B. ..... Lanesboro
Jondahl, W. H. ..... Rochester
Jones, R. H., Jr. ..... Rochester
§Joyce, G. I. ..... Rochester
§Judd, E. S., Jr. ..... Rochester
Kadish, E. J. ..... California
§Keating, F. R., Jr. ..... Rochester
Keating, J. U. ..... Rochester
Keeley, J. K. ..... Rochester
Keffer, W. H. ..... Rochester
§Keith, H. M. ..... Rochester
§Keith, N. M. ..... Rochester
§Kelsey, M. P. ..... Rochester
Kemper, C. M. ..... Rochester
§Kennedy, R. L. J. ..... Rochester
Kennedy, T. J. ..... Rochester
‡Kepler, E. J. ..... Rochester
§Kernohan, J. W. ..... Rochester
§Kierland, R. R. ..... Rochester
King, Nancy B. ..... Rochester
Kirby, J. L. ..... Rochester
§Kirklin, B. R. ..... Rochester
Kirklin, J. W. ..... Rochester
Kirkpatrick, N. R. ..... Rochester
Klontz, C. E., Jr. ..... Rochester
‡Knisely, R. M. ..... Rochester
Knutson, J. R. B. ..... Rochester
§Knutson, L. A. ..... Spring Grove
§Koelsche, G. A. ..... Rochester
Kreilkamp, B. L. ..... Rochester
§Krusen, F. H. ..... Rochester
Kurzweg, F. T. ..... Plaquemine, La.
Kusske, B. M. ..... Caledonia
§Kvale, W. F. ..... Rochester
§Lake, C. F. ..... Rochester
§Lampert, E. G. ..... Rochester
Lamont, C. S. ..... Rochester
Landry, R. M. ..... Rochester
Lannin, J. C. ..... Mabel
Larrabee, W. F., Jr. ..... Rochester
§Leary, W. V. ..... Rochester
Leavitt, M. D. ..... Rochester
LeBlanc, L. J. ..... Rochester
Leden, U. M. ..... Rochester
§Leddy, E. T. ..... Rochester
Lee, I. B. ..... Rochester
Lee, M. J. ..... Rochester
Lemon, W. E. ..... Rochester
§Lemon, W. S. ..... Rochester
Levin, Louis ..... Rochester
§Lillie, H. I. ..... Rochester
Lillie, J. C. ..... Rochester
§Lipscomb, P. R. ..... Rochester
Lofgren, K. A. ..... Rochester
Logan, Arch, Jr. ..... Rochester
§Logan, A. H. ..... Rochester
§Logan, G. B. ..... Rochester
Lombardi, A. A. ..... Rochester
Long, C. M. ..... Rochester
Long, J. W. ..... Rochester
§Love, J. G. ..... Rochester
§Lovelady, S. B. ..... Rochester
Lovshin, L. L. ..... Rochester
Lowy, Alexander, Jr. ..... Rochester
Loyd, E. L. ..... Rochester
Ludden, T. E. ..... Rochester
Luellen, T. J. ..... Rochester
§Lundy, J. S. ..... Rochester
Lyman, R. W. ..... Rochester
Lynch, J. L. ..... Rochester
§MacCarty, C. S. ..... Rochester
†‡MacCarty, W. C. ..... Rochester
Macdonald, I. D. ..... Rochester
§MacLean, A. R. ..... Rochester
‡MacMurtrie, W. J., Jr. ..... Bethesda, Md.
Macy, Dorothy ..... Rochester
§Magath, T. B. ..... Rochester
§†Mann, F. C. ..... Rochester
Marek, F. H. ..... Rochester
Margulies, Harold ..... Rochester
§Masson, D. M. ..... Rochester
§Masson, J. C. ..... Rochester
Mayfield, L. H. ..... Rochester
§Mayo, C. W. ..... Rochester
§Maytum, C. K. ..... Rochester
McAnally, A. K. ..... Rochester
§McBean, J. B. ..... Rochester
McClellan, J. T. ..... Rochester
McConahey, W. M., Jr. ..... Rochester
McCorkle, J. K. ..... Rochester
McCready, F. J. ..... Rochester
McCreight, W. G. ..... Rochester
§McDonald, J. R. ..... Rochester
McElin, T. W. ..... Rochester
McGuff, P. E. ..... Rochester
McKaig, C. B. ..... Pine Island
McLaughlin, B. H. ..... Rochester
McMahon, J. M. ..... Rochester
McMillan, J. T. ..... Rochester
McQuarrie, H. B. ..... Rochester
‡Meadows, J. A. ..... Rochester
Medwick, J. K. ..... Rochester
Merrill, J. G. ..... Rochester
§Merritt, W. A. ..... Rochester
Messler, J. D. ..... California
Meyer, A. C. ..... Rochester
Meyer, W. M. ..... Rochester
§Meyerding, H. W. ..... Rochester
Mezen, J. F. ..... Rochester
Millen, F. J. ..... Rochester
‡Miller, Sidney ..... Rochester
Mills, M. D. ..... Rochester
§Mills, S. D. ..... Rochester
§Moersch, F. P. ..... Rochester
§Moersch, H. J. ..... Rochester
Montgomery, G. E. ..... Rochester
§Montgomery, Hamilton ..... Rochester
Morgan, E. H. ..... Rochester
Morgan, J. L. ..... Rochester
§Morlock, C. G. ..... Rochester
Morris, C. R. ..... Rochester
Morris, D. S. ..... Rochester
Morrison, A. E., Jr. ..... Rochester
Morrow, J. R. ..... Rochester
Murphy, M. E. ..... Rochester
Murphy, M. H. ..... Rochester
‡Murray, R. A. ..... Rochester
Musgrove, J. E. ..... Rochester
Mussey, Mary E. ..... Rochester
§Mussey, R. D. ..... Rochester
Mussey, R. D., Jr. ..... Rochester
§Myers, T. T. ..... Rochester
Nacktwey, R. E. ..... Rochester
Nehring, J. P. ..... Preston
Neibling, H. A. ..... Rochester
Nelson, C. G. ..... Rochester
§New, G. B. ..... Rochester
§Nichols, D. R. ..... Rochester
‡Nickeson, R. W. ..... Rochester
Nix, J. T. ..... Rochester
Nixon, R. R. ..... Rochester
Nordland, M. A. ..... Rochester
Norley, Theodore ..... Rochester
§Norris, N. T. ..... Caledonia
Norval, M. A. ..... Rochester
§Odel, H. M. ..... Rochester
Olcott, E. D. ..... Rochester
§O'Leary, P. A. ..... Rochester
§Olsen, A. M. ..... Rochester
§Olson, E. A. ..... Pine Island
Olson, G. E. ..... West Concord
§Olson, S. W. ..... Rochester
O'Neal, Ruth ..... Rochester
Onsgard, L. K. ..... Houston
Osborn, J. E. ..... Rochester
Owen, C. A., Jr. ..... Rochester
Paalman, R. J. ..... Rochester
Painter, R. C. ..... Rochester
Palazzo, F. A. ..... Rochester
Parke, F. F. ..... Rochester
§Parker, H. L. ..... Rochester
§Parker, R. L. ..... Rochester
Parkhill, Edith M. ..... Rochester
Parkin, T. W. ..... Rochester
Parkinson, Dwight ..... Rochester
Paschall, Jack, Jr. ..... Rochester
Paulson, J. A. ..... Rochester
Pearson, C. C. ..... Rochester
Pease, Gertrude L. ..... Rochester
§Pemberton, J. deJ. ..... Rochester
§Pender, J. W. ..... Rochester
Perkins, R. F. ..... Rochester
Perry, F. L. ..... Rochester
§Peters, G. A. ..... Rochester
§Petersen, M. C. ..... Rochester
Peterson, J. R. ..... Rochester
Phillips, S. K. ..... Rochester
§Piper, M. C. ..... Rochester
§Plummer, W. A. ..... Rochester
Pollack, A. A. ..... Rochester
§Polley, H. F. ..... Rochester
§Pool, T. L. ..... Rochester
Poore, T. N. ..... Rochester
§Popp, W. C. ..... Rochester
Porter, C. B. ..... Rochester
Potter, R. T. ..... Rochester
§Powers, F. H. ..... Rochester
§Prangen, A. D. ..... Rochester
§Pratt, J. H. ..... Rochester
Pratt, W. C. ..... Rochester
§Prickman, L. E. ..... Rochester
Pridgen, J. E. ..... Rochester
§Priestley, J. T. ..... Rochester
Prough, W. A. ..... Rochester
§Pruitt, R. D. ..... Rochester
§Pugh, D. G. ..... Rochester
Putman, H. C., Jr. ..... Rochester
Ralston, D. E. ..... Rochester
Ramsey W. H. II ..... Rochester
§Randall, L. M. ..... Rochester
Rang, R. H. ..... Rochester
§Rasmussen, W. C. ..... Rochester
Raszkowski, H. J. ..... Rochester
ReMine, W. H., Jr. ..... Rochester
Remington, J. H. ..... Rochester
Reynolds, J. L. ..... Rochester
Rice, Roberta G. ..... Rochester
Ricks, H. C., Jr. ..... Rochester
Ridley, Roger W. ..... Rochester
Rinehart, Robert E. Wheeler, Oregon
§Risser, A. F. ..... Stewartville
§Rivers, A. B. ..... Rochester
Roberts, N. J. ..... Rochester
§Rogne, W. G. ..... Spring Grove
Rosenbaum, E. E. ..... Omaha, Nebraska
Routley, E. F. ..... Rochester
Rovelstad, R. A. ..... Rochester
§Rucker, C. W. ..... Rochester
Ruff, C. C. ..... Rochester
Rulison, E. T., Jr. ..... Rochester
Rydall, J. R. ..... Rochester
§Rynearson, E. H. ..... Rochester
Salassa, R. M. ..... Rochester
§Sanford, A. H. ..... Rochester
Sanford, R. A. ..... Rochester
§Sauer, W. G. ..... Rochester
Saylor, H. L. ..... Rochester
§Sayre, G. P. ..... Rochester
Scandalis, P. R. ..... Rochester
Scanlon, R. L. ..... Rochester
Schafer, L. A. ..... Rochester
§Scheifley, C. H. ..... Rochester
Schlotter, D. C. ..... Rochester
§Schmidt, H. W. ..... Rochester
‡Scholten, R. A. ..... Rochester
Seebach, Lydia M. ..... Rochester
Seiler, H. H. ..... Rochester
§Seldon, T. H. ..... Rochester
§Seybold, W. D. ..... Rochester
Shellito, J. G. ..... Rochester
Sheridan, Viola E. ..... Rochester
§Shick, R. M. ..... Rochester
Shonyo, E. S. ..... Rochester
Short, C. A., Jr. ..... Rochester
Shullenberger, C. C. ..... Rochester
§Simonton, K. M. ..... Rochester
Skaug, H. M. ..... Chatfield
‡Skillern, P. G., Jr. ..... Rochester
Skroch, E. E. ..... Rochester
Slaughter, O. L. ..... Rochester
Sloan, W. P., Jr. ..... Rochester
§Slocumb, C. H. ..... Rochester
Smith, D. E. ..... Rochester
§Smith, F. L. ..... Rochester
Smith, F. R. ..... Rochester
§Smith, H. L. ..... Rochester
§Smith, L. A. ..... Rochester
§Smith, N. D. ..... Rochester
Smith, O. O., Jr. ..... Rochester
§Snell, A. M. ..... Rochester
Snider, G. G. ..... Rochester
Spar, A. A. ..... Rochester
Spaulding, C. A. ..... Rochester
Spear, R. C. ..... Rochester
§Sprague, R. G. ..... Rochester
‡Spray, Paul ..... Rochester
Spencer, J. R. ..... Rochester
Stark, D. B. ..... Rochester
Stark, F. M. ..... Rochester
‡Starks, W. O. ..... Rochester
Starrs, R. P. ..... Rochester
Stauffer, M. H. ..... Rochester
Stevens, J. E., Jr. ..... Rochester
§Stickney, J. M. ..... Rochester
§Stilwell, G. G. ..... Rochester
Stokes, G. D. ..... Rochester
§Stroebel, C. F., Jr. ..... Rochester
Stuart, R. L. ..... Rochester
Sundberg, C. L. ..... Rochester
†Sutherland, C. G. ..... Rochester
Svien, H. J. ..... Rochester
Sweeney, A. R. ..... Rochester
Taylor, B. E. ..... Rochester
Thom, J. G. ..... Rochester

§Thompson, G. J. ..... Rochester
§Tillisch, J. H. ..... Rochester
Tobin, J. R., Jr. ..... Rochester
Tompkins, S. F. ..... Rochester
Tondreau, R. L. ..... Rochester
Tosseland, N. E. ..... Rochester
Uhler, W. M. ..... Rochester
§Uihlein, Alfred ..... Rochester
§Underdahl, L. O. ..... Rochester
Upshaw, Bette Y. ..... Rochester
Upshaw, Jackson E. ..... Rochester
‡Urban, D. A. ..... Rochester
Van Cleve, H. P., Jr. ..... Rochester
Van Herik, Martin ..... Rochester
§Vaughn, L. D. ..... Rochester
§Wagener, H. P. ..... Rochester
§Wakefield, E. G. ..... Rochester
Wakim, K. G. ..... Rochester
Walsh, A. C. ..... Rochester
§Walsh, M. N. ..... Rochester
§Walters, Waltman ..... Rochester
Wang, Jun Chuam ..... Rochester
‡Ward, B. H. ..... Rochester
§Watkins, C. H. ..... Rochester
Watkins, D. H. ..... Rochester
Watts, C. F. ..... Rochester
Watts, W. E. ..... Rochester
§Waugh, J. M. ..... Rochester
§Weber, H. M. ..... Rochester
§Weed, L. A. ..... Rochester
§Weir, J. F. ..... Rochester
Weisman, S. J. ..... Rochester
Wellman, W. E. ..... Rochester
Wells, G. R. ..... Rochester
Wells, J. J. ..... Rochester
Wessel, M. A. ..... Rochester
§Westrup, J. E. ..... Rochester
White, E. F., Jr. . Seattle, Washington
White, N. K. ..... Rochester
Whitesell, F. B. ..... Rochester
§Wilder, R. M. ..... Rochester
§Williams, H. L., Jr. ..... Rochester
Williams, R. R., Jr. ..... Rochester
†Williams, R. V. ..... Rushford
§Willius, F. A. ..... Rochester
Wilmer, H. A. ..... Rochester
Wilson, G. T. ..... Rochester
§Wilson, R. B. ..... Rochester
Winchester, E. C. ..... Rochester
Winchester, W. W. ..... Rochester
Wold, L. E. ..... Rochester
§Wollaeger, E. E. ..... Rochester
§Woltman, H. W. ..... Rochester
Wood, G. O. ..... Rochester
§Wood, H. G. ..... Rochester
‡Wood, W. D. ..... Rochester
Woodard, D. E. ..... Rochester
Woolner, L. B. ..... Rochester
Worden, R. E. ..... Rochester
§Young, H. H. ..... Rochester
Zagaria, J. F. ..... Rochester

PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

Douglas, Grant, Otter Tail and Wilkin Counties
Regular meetings quarterly
Annual meeting, December
Number of Members: 60

President
Paulson, T. S. ..... Fergus Falls
Secretary
Baker, C. E. ..... Herman

Arndt, H. W. ..... Detroit Lakes
Baker, A. C. ..... Fergus Falls
Baker, C. E. ..... Herman
Baker, J. L. ..... Fergus Falls
Baker, N. H. ..... Fergus Falls
Bergquist, K. E. ..... Battle Lake
Bigler, L. E. ..... Perham
Blakey, A. R. ..... Osakis
§**Boline, C. A. ..... Battle Lake**
Boyd, L. M. ..... Alexandria
§**Burnap, W. L. ..... Fergus Falls**
Cain, J. H. ..... Hoffman
§Carlson, C. E. ..... Alexandria
§Clifford, G. W. ..... Alexandria
Combacker, L. C. ..... Fergus Falls
Dwinnell, L. A. ..... Fergus Falls
Emerson, E. E. ..... Osakis
Esser, John ..... Perham
§Estrem, C. O. ..... Fergus Falls
§Estrem, Ralph ..... Fergus Falls
Estrem, R. D. ..... Fergus Falls
Gunlagson, F. G. ..... Fergus Falls
Hanson, E. C. ..... New York Mills
Haskell, A. D. ..... Alexandria
§**Heiberg, E. A. ..... Fergus Falls**
§**Helseth, H. K. ..... Fergus Falls**
Jacobs, G. C. ..... Fergus Falls
Jacobson, C. W. ..... Breckenridge
Kaliher, Howard ..... Pelican Rapids
*§Kierland, P. E. ..... Alexander
Korda, H. A. ..... Pelican Rapids
Leibold, H. H. ..... Parkers Prairie
§**Lewis, A. J. ..... Henning**
§Lewis, Charles ..... Henning
Love, F. A. ..... Carlos
§**Lund, C. J. T. ..... Fergus Falls**
Miller, W. A. ..... New York Mills
Mouritsen, G. J. ..... Fergus Falls
Naegeli, F. A. ..... Fergus Falls
Nelson, R. A. ..... Fergus Falls
Nelson, W. O. B. ..... Fergus Falls
§O'Brien, Louis T. ..... Breckenridge
Ostergaard, Erling ..... Fergus Falls
Parson, Lillian B. ..... Elbow Lake
Parson, L. R. ..... Elbow Lake
Patterson, W. L. ..... Fergus Falls
§**Paulson, E. C. ..... Elbow Lake**
Paulson, T. S. ..... Fergus Falls
Randall, A. M. ..... Ashby
Reeve, E. T. ..... Elbow Lake
Rockwood, P. H. ..... Fergus Falls
Satersmoen, Theodore . . Pelican Rapids
§**Sather, E. R. ..... Alexandria**
§**Schamber, W. F. ..... Parkers Prairie**
§**Stemsrud, H. L. ..... Alexandria**
Sutton, H. R. ..... Hoffman
§**Tanquist, E. J. ..... Alexandria**
§**Thompson, H. B. ..... Fergus Falls**
Warner, J. J. ..... Perham
§**Wasson, L. F. ..... Alexandria**
Wray, W. E. ..... Campbell

RAMSEY COUNTY MEDICAL SOCIETY

Regular meetings, last Monday in every month excepting June, July, August
Annual meeting, last Monday in January
Number of Members: 415

President
Williams, C. K. ..... St. Paul
Secretary
Hilger, L. D. ..... St. Paul

§Adair, A. F., Jr. ..... St. Paul
§Adler, B. C. ..... St. Paul
§Ahrens, A. E. ..... St. Paul
§Ahrens, A. H. ..... St. Paul
*Alden, J. F. ..... St. Paul
§Alden, J. F., Jr. ..... St. Paul
§Arnquist, A. S. ..... St. Paul
§Arny, F. P. ..... St. Paul
§Arzt, P. K. ..... St. Paul
§Aurelius, J. R. ..... St. Paul
§Ausman, C. F. ..... St. Paul
Babb, Frank S. ..... St. Paul
§Bacon, D. K. ..... St. Paul
§†Bacon, L. C. ..... St. Paul
§Balcome, M. M. ..... St. Paul
Barnett, J. M. ..... St. Paul
§Barry, L. W. ..... St. Paul
Barsness, N. O. N. ..... St. Paul
Barton, John C. ..... St. Paul
§†Beals, Hugh ..... St. Paul
§Beech, R. H. ..... St. Paul
§Beek, H. O. ..... St. Paul
Beer, J. J. ..... St. Paul
§Bell, C. C. ..... St. Paul
§Benepe, J. L. ..... St. Paul
§Bentley, N. P. ..... St. Paul
Bernstein, W. C. ..... St. Paul
§Bicek, J. F. ..... St. Paul
Binger, H. E. ..... St. Paul
Black, E. J. ..... St. Paul
§Bock, R. A. ..... St. Paul
Boeckmann, Egil ..... St. Paul
§Bolender, H. L. ..... St. Paul
Borg, J. F. ..... St. Paul
§Bouma, L. R. ..... St. Paul
§Brand, G. D. ..... St. Paul
Bray, E. R. ..... St. Paul
§Briggs, J. F. ..... St. Paul
§Broadie, T. E. ..... St. Paul
§Brodie, W. D. ..... St. Paul
Brown, J. C. ..... St. Paul
Bulinski, T. J. ..... St. Paul
§Burch, E. P. ..... St. Paul
Burch, F. E. ..... St. Paul
Burlingame, David A. ..... St. Paul
§Burns, R. M. ..... St. Paul
Burton, C. G. ..... St. Paul
§Busher, H. H. ..... St. Paul
§Cain, C. L. ..... St. Paul
Callahan, F. F. ..... St. Paul
§Carley, W. A. ..... St. Paul
§Carroll, W. C. ..... St. Paul
§Chadbourn, C. R. ..... St. Paul
§Chatterton, C. C. ..... St. Paul
Chlad, A. J. ..... St. Paul
§Christiansen, A. ..... St. Paul
§Clark, H. B., Jr. ..... Minneapolis
Cochrane, B. B. ..... St. Paul
Coddon, W. D. ..... St. Paul
§Colby, W. L. ..... St. Paul
§Cole, W. H. ..... St. Paul
†Collie, H. G. ..... St. Paul
†Colvin, A. R. ..... St. Paul
Connolly, C. J. ..... St. Paul
§Connor, C. E. ..... St. Paul
§Cook, C. K. ..... St. Paul
§Cooper, C. C. ..... St. Paul
§Countryman, R. S. ..... St. Paul
†Cowern, E. W. ..... No. St. Paul
§Craig, D. M. ..... St. Paul
§Critchfield, L. R. ..... St. Paul
Crombie, F. J. ..... No. St. Paul
§Crump, J. W. ..... St. Paul
§Culligan, J. M. ..... St. Paul
§Culver, L. G. ..... St. Paul
§Dack, L. G. ..... St. Paul
Dahlstet, J. P. ..... St. Paul
†Daugherty, E. B. . . Marine-on-St. Croix
§Davis, E. V. ..... St. Paul
Decker, C. H. ..... St. Paul
§Dedolph, Karl ..... St. Paul
§Derauf, B. I. ..... St. Paul
§Deters, D. C. ..... St. Paul
§Dickson, T. H. ..... St. Paul
Donohue, P. F. ..... St. Paul
Dovre, C. M. ..... St. Paul
§Drake, C. B. ..... St. Paul
§Dunn, J. N. ..... St. Paul
§Earl, G. A. ..... St. Paul
§Earl, J. R. ..... St. Paul
Earl, Robert ..... St. Paul
§Edlund, Gustaf ..... St. Paul
Edward, L. G. ..... St. Paul
Edwards, J. W. ..... St. Paul
§Edwards, T. J. ..... St. Paul
Eginton, C. T. ..... St. Paul
Ely, O. S. ..... So. St. Paul
§Emerson, E. C. ..... St. Paul
§Endress, E. K. ..... St. Paul
Enroth, O. E. ..... St. Paul
Ernest, G. C. H. ..... So. St. Paul
§Ersfeld, Murray P. ..... St. Paul
†Eshelby, E. C. ..... St. Paul
Evert, J. A., Jr. ..... St. Paul
†Fahey, E. W. ..... St. Paul
§Ferguson, J. C. ..... St. Paul
§Fessler, H. H. ..... St. Paul
Fink, D. L. ..... St. Paul
Fisher, D. W. ..... St. Paul
Fisher, Isadore ..... St. Paul
§Flanagan, H. F. ..... St. Paul
Flink, E. B. ..... St. Paul
§Fogarty, C. W. ..... St. Paul
Fogarty, C. W., Jr. ..... St. Paul
§Fogelberg, E. J. ..... St. Paul
§Foley, F. E. B. ..... St. Paul
Forsythe, J. R. ..... St. Paul
†Freeman, C. D. ..... St. Paul
Freidman, L. L. ..... St. Paul
Fritz, W. L. ..... St. Paul
§Froats, C. W. ..... St. Paul
Frost, Russell H. ..... St. Paul
§Garbrecht, A. W. ..... St. Paul
Gardiner, D. G. ..... St. Paul
§Gardner, W. P. ..... St. Paul
Garrow, D. M. ..... St. Paul
Garthe, J. J. ..... St. Paul
§Geer, E. K. ..... St. Paul
§Gehlen, J. N. ..... St. Paul
§Geist, G. A. ..... St. Paul
§Ghent, Harry ..... St. Paul
§Gibbs, E. C. ..... St. Paul
Gibson, D. P. ..... St. Paul
†Gilfillan, J. S. ..... St. Paul
Gilkey, S. E. ..... St. Paul
Gillespie, D. R. ..... St. Paul
*†Ginsberg, William ..... St. Paul
Gleason, W. A. ..... St. Paul
Goldsmith, J. W. ..... St. Paul

§Goltz, E. V. ..... St. Paul
Grant, H. W. ..... St. Paul
§Gratzek, Thomas ..... St. Paul
§Grau, R. K. ..... St. Paul
§Gruenhagen, A. P. ..... St. Paul
*†Hall, A. R. ..... St. Paul
Hall, H. H. ..... St. Paul
§Hammes, E. M. ..... St. Paul
Hammes, E. M., Jr. ..... St. Paul
Hammond, J. F. ..... St. Paul
§Hanson, H. B. ..... St. Paul
§Harmon, G. E. ..... St. Paul
§Hartfiel, W. F. ..... St. Paul
Hartig, Marjorie ..... St. Paul
§Hartley, E. C. ..... St. Paul
§Hassett, M. F. ..... St. Paul
§Hauser, V. P. ..... St. Paul
§Hayes, A. F. ..... St. Paul
§Heck, W. W. ..... St. Paul
Hedenstrom, F. G. ..... St. Paul
Henderson, A. J. G. ..... St. Paul
Hengstler, W. H. ..... St. Paul
§Hensel, C. N. ..... St. Paul
Herman, S. M. ..... St. Paul
§Heron, R. C. ..... St. Paul
§Herrmann, E. T. ..... St. Paul
Hertz, M. J. ..... St. Paul
§Hilger, A. W. ..... St. Paul
†Hilger, D. D. ..... St. Paul
*§Hilger, L. A. ..... St. Paul
§Hilger, J. A. ..... St. Paul
§Hilger, L. D. ..... St. Paul
Hilker, M. D. ..... St. Paul
Hiniker, L. P. ..... St. Paul
§Hochfilzer, J. J. ..... St. Paul
Hodgson, Jane E. ..... St. Paul
§Hoff, Alfred ..... St. Paul
Holcomb, O. W. ..... St. Paul
§Hollinshead, W. H. ..... St. Paul
§Holmen, R. W. ..... St. Paul
§Holt, J. E. ..... St. Paul
Hopkins, G. W. ..... St. Paul
Howard, M. A. ..... St. Paul
Howard, W. S. ..... St. Paul
Howe, N. W. ..... St. Paul
§Hullsiek, H. E. ..... St. Paul
§Hullsiek, R. B. ..... Minneapolis
Hultgen, W. J. ..... St. Paul
Hurwitz, M. M. ..... St. Paul
†Ide, A. W. ..... St. Paul
Ikeda, Kano ..... St. Paul
Ingerson, C. A. ..... St. Paul
Janssen, M. E. ..... St. Paul
Jesion, J. W. ..... St. Paul
§Johanson, W. G. ..... St. Paul
§Johnson, A. M. ..... St. Paul
§Johnson, C. E. ..... St. Paul
Johnson, J. A. ..... St. Paul
Jones, E. M. ..... St. Paul
§Kamman, G. R. ..... St. Paul
Kaplan, D. H. ..... St. Paul
Karon, I. M. ..... St. Paul
§Kasper, E. M. ..... St. Paul
Katz, L. L. ..... St. Paul
Katzovitz, Hyman ..... St. Paul
Keefe, R. E. ..... St. Paul
§Kelly, J. V. ..... St. Paul
*Kelly, P. H. ..... St. Paul
§Kelsey, C. M. ..... St. Paul
§Kenefick, E. V. ..... St. Paul
§Kennedy, W. A. ..... St. Paul
§Kenyon, T. J. ..... St. Paul
§Kesting, Herman ..... St. Paul
King, G. L. ..... St. Paul
Kleifgen, G. V. H. ..... St. Paul
§Klein, H. N. ..... St. Paul
*§†Knauff, M. K. ..... St. Paul
§Knutson, G. E. ..... St. Paul
§Kugler, A. A. ..... St. Paul
§Kuske, A. W. ..... St. Paul
Kvitrud, Gilbert ..... St. Paul
§Lannin, B. G. ..... St. Paul
§Larsen, C. L. ..... St. Paul
Larson, Eva-Jane ..... St. Paul
Larson, J. T. ..... South St. Paul
Larson, K. R. ..... St. Paul
Lax, M. H. ..... St. Paul
§Leahy, Bartholomew ..... St. Paul
§Leavenworth, R. O. ..... St. Paul
Leick, R. M. ..... St. Paul
§Leitch, Archibald ..... St. Paul
§Lepak, J. A. ..... St. Paul
†Lerche, William ..... Cable, Wis.
§Leven, N. L. ..... St. Paul
§Leverenz, C. W. ..... St. Paul

Levin, Bert ..... St. Paul
Levitt, G. X. ..... St. Paul
§Lick, C. L. ..... St. Paul
Lien, R. J. ..... St. Paul
§Lightbourn, E. L. ..... St. Paul
Lilleberg, N. J. ..... St. Paul
Lippman, H. S. ..... St. Paul
§Loken, S. M. ..... St. Paul
Lowe, E. R. ..... So. St. Paul
Lowe, T. A. ..... So. St. Paul
§Lundholm, A. M. ..... St. Paul
§Lynch, F. W. ..... St. Paul
McAdams, J. B. ..... St. Paul
McCain, D. L. ..... St. Paul
McCarthy, J. J. ..... St. Paul
McCarthy, W. R. ..... St. Paul
McClanahan, J. H. ..... White Bear
McClanahan, T. S. ..... White Bear
§McCloud, C. N. ..... St. Paul
§McEwan, Alexander ..... St. Paul
†McLaren, Jennette M. ..... Minneapolis
§Madden, J. F. ..... St. Paul
Madland, Robert S. ..... St. Paul
Maertz, W. F. ..... St. Paul
§Malerich, J. A. ..... St. Paul
Marks, R. W. ..... St. Paul
Martin, D. L. ..... St. Paul
§Martineau, J. L. ..... St. Paul
§Meade, J. R. ..... St. Paul
§Mears, B. J. ..... St. Paul
§Medelman, J. P. ..... St. Paul
Melancon, J. F. ..... St. Paul
Menold, W. F. ..... St. Paul
Merendino, A. A. ..... St. Paul
Merner, T. B. ..... St. Paul
§Meyerding, E. A. ..... St. Paul
§Moga, J. A. ..... St. Paul
Molander, H. A. ..... St. Paul
Moquin, Marie A. ..... St. Paul
Moriarty, Berenice ..... St. Paul
Moriarty, Cecile R. ..... St. Paul
Muller, A. E. ..... North St. Paul
§Muller, R. T. ..... St. Paul
Naegeli, A. E. ..... St. Paul
§Nash, L. A. ..... St. Paul
Nelson, L. A. ..... St. Paul
§Nichols, A. E. ..... St. Paul
§Noble, J. F. ..... St. Paul
§Noble, J. L. ..... St. Paul
Nuebel, C. J. ..... St. Paul
Nye, Katherine A. ..... St. Paul
Nye, Lillian L. ..... St. Paul
O'Brien, W. M. ..... St. Paul
O'Connor, L. J. ..... St. Paul
*Oerting, Harry ..... St. Paul
§Ockuly, O. E. ..... St. Paul
§Ogden, Warner ..... St. Paul
§Ohage, Justus Jr. ..... St. Paul
O'Kane, T. W. ..... St. Paul
§Olsen, R. L. ..... St. Paul
Olson, C. A. ..... St. Paul
§O'Reilley, B. E. ..... St. Paul
§Ostergren, E. W. ..... St. Paul
§Ouellette, A. J. ..... St. Paul
§Pearson, F. R. ..... St. Paul
Pearson, M. M. ..... St. Paul
Pedersen, A. H. ..... St. Paul
§Perry, C. G. ..... St. Paul
Peterson, D. B. ..... St. Paul
§Peterson, H. O. ..... St. Paul
§Peterson, J. L. E. ..... St. Paul
§Plondke, F. J. ..... St. Paul
§Prendergast, H. J. ..... St. Paul
Quattlebaum, F. W. ..... St Paul
Radabaugh, R. C. ..... Hastings
§Ralph, J. R. ..... St. Paul
§†Ramsey, W. R. ..... St. Paul
Rasmussen, R. C. ..... St. Paul
§Rea, C. E. ..... St. Paul
Reid, J. W. ..... St. Paul
§Richards, E. T. F. ..... St. Paul
§Richardson, H. E. ..... St. Paul
§Richardson, R. J. ..... St. Paul
Rick, P. F. W. ..... St. Paul
Rinkey, Eugene ..... St. Paul
§Ritchie, W. P. ..... St. Paul
§Ritt, A. E. ..... St. Paul
§Rogers, S. F. ..... St. Paul
Rolig, D. H. ..... St. Paul
Rosenholtz, Burton ..... St. Paul
§Rosenthal, Robert ..... St. Paul
§Roth, G. C. ..... St. Paul
§Rothschild, H. J. ..... St. Paul
§Roy, P. C. ..... St. Paul
§†Ruhlberg, G. N. ..... Tarzona, Calif.

Rutherford, W. C. ..... Nisswa
Ryan, James D. ..... St. Paul
§Ryan, J. J. ..... St. Paul
§Ryan, J. M. ..... St. Paul
§Ryan, M. E. ..... St. Paul
§Sarnecki, M. M. ..... St. Paul
Satterlund, V. L. ..... St. Paul
§Savage, F. J. ..... St. Paul
Schmidtke, R. L. ..... St. Paul
Schoch, R. B. J. ..... St. Paul
§Schons, Edward ..... St. Paul
§Schroeckenstein, H. F. ..... St. Paul
§†Schuldt, F. C. ..... St. Paul
§Schulze, A. G. ..... St. Paul
§Schwyzer, H. C. ..... St. Paul
§Scott, E. E. ..... St. Paul
Seknon, M. S. ..... St. Paul
†Senkler, G. E. ..... St. Paul
§Setzer, H. J. ..... St. Paul
Shannon, W. R. ..... St. Paul
Sheehan, J. R. ..... St. Paul
†Shellman, J. T. ..... Santa Monica, Calif.
§Shimonek, S. W. ..... St. Paul
Short, Jacob ..... St. Paul
Siegel, Clarence ..... St. Paul
§Simons, L. T. ..... St. Paul
Singer, B. J. ..... St. Paul
Sisk, H. E. ..... Hastings
†Skinner, H. O. ..... St. Paul
§Smisek, E. A. ..... St. Paul
§Smith, V. D. E. ..... St. Paul
§Snyder, G. W. ..... St. Paul
§Sohlberg, O. I. ..... St. Paul
§Sommers, Ben ..... St. Paul
§Sorem, M. B. ..... St. Paul
Soucheray, P. H. ..... St. Paul
§Souster, B. B. ..... St. Paul
§Sprafka, J. M. ..... St. Paul
§Steinberg, C. L. ..... St. Paul
§Sterner, E. G. ..... St. Paul
§Sterner, E. R. ..... St. Paul
Sterner, J. J. ..... St. Paul
§Sterner, O. W. ..... St. Paul
Stewart, Alexander ..... St. Paul
Stolpestad, A. H. ..... St. Paul
§Stolpestad, H. L. ..... St. Paul
§Strate, G. E. ..... St. Paul
Straus, M. L. ..... St. Paul
Strem, E. L. ..... St. Paul
Sturley, Rodney F. ..... St. Paul
Swanson, J. A. ..... St. Paul
§Swendson, J. J. ..... St. Paul
§Teisberg, C. B. ..... St. Paul
§Teisberg, J. E. ..... St. Paul
Thompson, F. A. ..... St. Paul
Thoreson, M. C. Bernice ..... So. St. Paul
Tifft, C. R. ..... St. Paul
§Tracht, R. R. ..... St. Paul
Travis, J. S. ..... St. Paul
§Tregilgas, H. R. ..... So. St. Paul
Varco, R. L. ..... St. Paul
Veirs, Dean ..... St. Paul
Veirs, Ruby J. S. ..... St. Paul
§Venables, A. E. ..... St. Paul
§Von der Weyer, W. H. ..... St. Paul
§Waas, C. W. ..... St. Paul
§Walker, A. E. ..... St. Paul
§Walter, C. W. ..... St. Paul
§†Ward, P. D. ..... St. Paul
Warren, C. A. ..... St. Paul
Watson, P. T. ..... St. Paul
Watson, W. J. ..... Newport
Watz, C. E. ..... St. Paul
§Webber, F. L. ..... St. Paul
§Weis, B. A. ..... St. Paul
§Weisberg, Maurice ..... St. Paul
§Wenzel, G. P. ..... St. Paul
Werner, O. S. ..... Cambridge
†Wheeler, M. W. ..... St. Paul
†Whitecare, J. C. ..... St. Paul
Williams, A. B. ..... St. Paul
§Williams, C. K. ..... St. Paul
§Williams, J. A. ..... St. Paul
§Wilson, J. A. ..... St. Paul
§Wilson, J. V. ..... St. Paul
Winnick, J. B. ..... St. Paul
§Wold, K. C. ..... St. Paul
§Wolff, H. J. ..... St. Paul
Wolkoff, H. J. ..... St. Paul
Word, H. L. ..... St. Paul
Youngren, E. R. ..... St. Paul
Zachman, L. L. ..... St. Paul
§Zimmermann, H. B. ..... St. Paul

RED RIVER VALLEY MEDICAL SOCIETY

Kittson, Mahnomen, Marshall, Norman, Pennington, Polk, Red Lake and Roseau Counties

Regular meetings quarterly—Annual meeting, December

Number of Members: 63

President	
Bechtal, M. J.	Warren
Secretary	
Sather, R. O.	Crookston

§Adkins, C. M. ..... Thief River Falls
Anderson, W. E. ..... Clearbrook
Bechtel, M. J. ..... Warren
§Behr, O. K. ..... Crookston

Berge, D. O. ..... Roseau
Berlin, A. S. ..... Hallock
†§Bertelsen, O. L. ..... Crookston
Biedermann, Jacob ..... Thief River Falls

Boynton, Bruce ..... Ada
§Bratrud, Edward .... Thief River Falls
Bratrud, T. E. ..... Thief River Falls
Brink, A. ..... Baudette
§Brown, L. L. ..... Crookston
Cameron, J. H. ..... Crookston
Canfield, A. ..... Thief River Falls
Carlson, A. E. ..... Warren
Covey, K. W. ..... Mahnomen
Delmore, John L. Jr. ..... Roseau
§Delmore, John L., Sr. ..... Roseau
Delmore, R. J. ..... Roseau
§Erickson, Eskil ..... Halstad
Fraser, F. A. ..... Thief River Falls
Freedland, M. ..... Fosston
Haberle, C. A. .... Thief River Falls
§Henney, W. H. ..... McIntosh
Hollands, W. H. ..... Fisher
Holmstrom, C. H. ..... Warren
Janecky, A. G. ..... Warroad
Johnson, E. A. ..... Thief River Falls
Johnson, H. C. ..... Thief River Falls
Johnson, R. E. ..... Crookston
Kirk, G. P. ..... East Grand Forks
Klefstad, L. H. ..... Greenbush
Knutson, G. A. ..... Hallock
§Kostick, W. R. ..... Fertile
Lehman, S. J. ..... Thief River Falls
§Loken, Theodore ..... Ada
Lynde, O. G. ..... Los Gatos, Calif.
§Mellby, O. F. ..... Thief River Falls
§Mercil, W. F. ..... Crookston
*Morley, G. A. ..... Crookston
Nelson, A. S. ..... Thief River Falls
Nelson, H. E. ..... Crookston
Nietfeld, A. B. ..... Warren
§Norman, J. F. ..... Crookston
§Oppegaard, C. L. ..... Crookston
§Oppegaard, M. O. ..... Crookston
Parsons, J. G. ..... Crookston
Pearson, L. O. ..... Warroad
Pumala, E. F. ..... Warren
§Reff, A. R. ..... Crookston
Rodwell, T. F. ..... Mahnomen
§Rydland, A. D. ..... Crookston
†Sather, Allen ..... Fosston
§Sather, G. A. ..... Fosston
§Sather, R. O. ..... Crookston
§Shedlov, Abraham ..... Fosston
§Starekow, M. D. .. Thief River Falls
Stensgaard, K. L. .... Thief River Falls
*Stevens, John ..... Gonvick
§Uhley, C. G. ..... Crookston
Van Rooy, G. T. .... Thief River Falls
Watson, R. M. ..... Thief River Falls
§Wiltrout, I. G. ..... Oslo
Zorn, E. L. ..... Erskine

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, May
Number of Members: 32

President
Dubbe, F. H. ..... New Ulm

Secretary
Fesenmaier, O. B. ..... New Ulm

Anderson, D. C. ..... Lamberton
Bergman, O. B. ..... St. James
Black, W. A. ..... New Ulm
Bratrude, E. J. ..... St. James
§Bregel, F. I. ..... St. James
§Cairns, R. J. ..... Redwood Falls
Coulter, H. E. ..... Madelia
§Domeier, L. H. ..... New Ulm
§Dubbe, F. H. ..... New Ulm
§Dysterheft, A. F. ..... Gaylord
§Esser, O. J. ..... New Ulm
§Fesenmaier, O. B. ..... New Ulm
§Fritsche, Albert ..... New Ulm
§Fritsche, C. J. ..... New Ulm
§Fritsche, T. R. ..... New Ulm
§Gibbons, F. C. ..... Comfrey
§Goblirsch, A. P. ..... Sleepy Eye
*§Hammerseister, T. E. ..... New Ulm
§Hovde, Rolf ..... Winthrop
Just, H. J. ..... Hastings
§Keithahn, E. E. ..... Sleepy Eye
§Kruzick, S. J. ..... Sleepy Eye
§Kusske, A. L. ..... New Ulm
§Nelson, Glen ..... Fairfax
Nuessle, W. G. ..... Springfield
§Penk, E. L. ..... Springfield
Peterson, R. A. ..... Vesta
§Reineke, G. F. ..... New Ulm
§Saffert, C. A. ..... New Ulm
§Schroeppel, J. E. ..... Winthrop
§Seifert, O. J. ..... New Ulm
§Vogel, H. A. L. ..... New Ulm
*§Vogel, J. H. ..... New Ulm
*Weiser, G. B. ..... New Ulm
§Wohlrabe, E. J. ..... Springfield

RENVILLE COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of month
Annual meeting, November
Number of Members: 21

President
Johnson, O. H. ..... Redwood Falls

Secretary
Hinz, Walter ..... Bird Island

§Adams, R. C. ..... Bird Island
§Billings, R. E. ..... Franklin
§Brand, W. A. ..... Redwood Falls
§Ceplecha, S. F. ..... Redwood Falls
§Cosgriff, J. A. ..... Olivia
§Dordal, J. ..... Sacred Heart
§Erickson, R. E. ..... Hector
§Fawcett, A. M. ..... Renville
Flinn, T. E. ..... Redwood Falls
§Gaines, E. C. ..... Buffalo Lake
Heinz, I. B. ..... Wabasso
Heinz, L. H. ..... Wabasso
§Hinz, W. E. ..... Bird Island
*Johnson, H. E. ..... Bird Island
§Johnson, O. H. ..... Redwood Falls
§Johnson, W. E. ..... Morgan
Lenz, J. R. ..... Morton
Mesker, G. H. ..... Cambridge
§Passer, A. A. ..... Olivia
Potthoff, C. J. ..... Washington, D. C.
Priesinger, J. W. ..... Renville
§Walsh, J. F. ..... Olivia

RICE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, June
Number of Members: 31

President
Rumpf, C. W. ..... Faribault

Secretary
Francis, D. W. ..... Morristown

Belshe, J. C. ..... Northfield
§Dungay, N. S. ..... Northfield
§Engberg, E. J. ..... Faribault
Francis, D. W. ..... Morristown
§Hanson, A. M. ..... Faribault
§Hanson, J. W. ..... Northfield
Huxley, F. R. ..... Faribault
§Kennedy, G. L. ..... Faribault
Kolars, J. J. ..... Faribault
§Lende, Norman ..... Faribault
Lexa, F. J. ..... Lonsdale
McKeon, J. O. ..... Faribault
§Mears, R. F. ..... Northfield
Meyer, F. C. ..... Kenyon
Meyer, P. F. ..... Faribault
*Moses, Joseph, Jr. ..... Northfield
§Moses, R. R. ..... Kenyon
§Nielsen, A. M. ..... Northfield
§Nuetzman, A. W. ..... Faribault
Peterson, D. H. ..... Northfield
§Robilliard, C. M. ..... Faribault
Rohrer, C. A. ..... Waterville
Rumpf, C. W. ..... Faribault
†Rumpf, W. H. ..... Faribault
§Stevenson, F. W. ..... Faribault
§Street, Bernard ..... Northfield
§Studer, D. J. ..... Faribault
Traeger, C. A. ..... Faribault
§Weaver, P. H. ..... Faribault
West, E. J. ..... Fort Thomas, Ky.
Wilkinson, S. L. ..... Faribault
§Wilson, W. E. ..... Northfield

ST. LOUIS COUNTY MEDICAL SOCIETY

Carlton, Cook, Itasca, Lake and St. Louis Counties
Regular meetings, second Thursday every month except July and August
Annual meeting, December
Number of Members: 241

President
Rudie, P. S. ..... Duluth

Secretary
Johnson, K. E. ..... Duluth

§Abraham, A. L. ..... Duluth
§Adams, B. S. ..... Hibbing
Addy, E. R. ..... Gilbert
Anderson, C. L. ..... Ely
Anderson, H. R. ..... Deer River
§†Arhelger, S. W. ..... Duluth
§Arko, J. L. ..... Hibbing
§Armstrong, E. L. ..... Duluth
§Athens, A. G. ..... Duluth
*Ayres, G. T. ..... Ely
§Bachnik, F. W. ..... Hibbing
§Backus, R. W. ..... Nopeming
§Bagley, C. M. ..... Duluth
Bagley, Elizabeth C. ..... Duluth
§Bagley, W. R. ..... Duluth
Baich, V. M. ..... Bovey
§Bakkila, H. E. ..... Duluth
§Bardon, Richard ..... Duluth
§Barker, J. D. ..... Duluth
Barney, L. A. ..... Duluth
§Barrett, E. E. ..... Duluth
§Becker, F. T. ..... Duluth
Bepko, Marie K. ..... Cloquet
Berdez, G. L. ..... Duluth
Bergen, R. O. ..... Duluth
§Bianco, A. J. ..... Duluth
†Binet, H. E. ..... Grand Rapids
§Blackmore, S. C. ..... Biwabik
Bolz, J. A. ..... Grand Rapids
Boman, P. G. ..... Duluth
Booren, J. C. ..... Duluth
§Bowen, R. L. ..... Hibbing
§Boyer, S. H., Jr. ..... Duluth
Boyer, S. H., Sr. ..... Duluth
Braun, O. C. ..... Nashwauk
§Bray, P. N. ..... Duluth
§Bray, R. B. ..... Biwabik
Brooker, W. J. ..... Duluth
§Buckley, R. P. ..... Duluth
Burns, Catherine ..... Duluth
§Butler, J. K. ..... Carlton
Cantwell, W. F. .... International Falls
§*Carstens, C. E. ..... Hibbing
Chapman, T. L. ..... Duluth
§Chermak, F. G. .... International Falls
§Christenson, C. H. ..... Duluth
§Clark, I. T. ..... Duluth
§Clarke, E. T. ..... Buhl
§Cole, Frank ..... Duluth
§Coll, J. J. ..... Duluth
Collins, A. N. ..... Duluth
†Collins, H. C. ..... Duluth
§Coventry, W. A. ..... Duluth
§Coventry, W. D. ..... Duluth
Cunningham, C. B. ..... Virginia
Dahlin, I. T. ..... Aurora
§Derifield, R. S. ..... Hibbing
§Dickson, F. H., Jr. ..... Proctor
§Dittrich, R. J. ..... Duluth
§Doolittle, L. E. ..... Duluth
Doyle, G. C. ..... Duluth
§Eckman, P. F. ..... Duluth
§Eckman, R. J. ..... Duluth
§Eisenman, Walter ..... Coleraine

§Ekblad, J. W.....Duluth
§Elias, F. J.....Duluth
§Emanual, K. W.....Duluth
Eppard, R. M.....Cloquet
§Erskine, G. M.....Grand Rapids
§Estrem, T. A.....Hibbing
§Ewens, H. B.....Virginia
Fawcett, K. R.....Duluth
Felion, A. J.....Two Harbors
§Fellows, M. F.....Duluth
Ferrell, C. R.....Grand Rapids
§Fischer, M. McC.....Duluth
§Fisketti, Henry.....Duluth
§Flynn, B. F.....Hibbing
§Fredericks, M. G.....Duluth
*Gendron, J. F.....Grand Rapids
§Gillespie, M. G.....Duluth
§Goldish, D. R.....Duluth
§Goodman, C. E.....Virginia
§Gowan, L. R.....Duluth
§Graham, A. W.....Chisholm
§Grahek, J. P.....Ely
§Graves, W. N.....Duluth
Grinley, A. V.....Grand Rapids
Halme, W. B.....Cloquet
Haney, C. L.....Duluth
§Hansen, R. E.....Hibbing
§Hanson, E. O.....Cloquet
§Harris, C. N.....Hibbing
Hatch, W. E.....Duluth
Hathaway, S. J.....Chehalis, Wash.
§Hayes, M. F.....Nashwauk
§Hedberg, G. A.....Nopeming
Heiam, W. C.....Cook
§Hilding, A. C.....Duluth
Hill, F. E.....Duluth
Hirschboeck, F. J.....Duluth
§Hoff, H. O.....Duluth
§Houkom, S. S.....Duluth
Hutchinson, Henry.....Moose Lake
§Jacobson, Clarence.....Chisholm
§Jacobson, F. C.....Duluth
§Jensen, T. J.....Duluth
§Jeronimus, H. J.....Duluth
§Jessico, C. M.....Duluth
§Joffe, H. H.....Duluth
§Johnson, K. E.....Duluth
§Johnsrud, L. W.....Chisholm
§Jolin, F. M.....Bovey
§Kelley, A. C.....Duluth
§Kelley, K. J.....Bigfork
Kemp, M. W. North Madison, Indiana
§Klein, Harry.....Duluth
Klein, W. A.....Duluth
§Knapp, F. N.....Duluth
§Knoll, W. V.....Duluth
§Kohlbry, C. O.....Duluth
§Kitchevar, F. R.....Eveleth
Koskela, A. L.....Deer River
Koskela, L. E.....Deer River
§Krueger, V. R.....Nopeming

§La Bree, R. H.....Duluth
§Laird, A. T.....Duluth
Lenont, C. B.....Virginia
Lepak, F. J.....Duluth
§Litman, S. N.....Duluth
§Loofbourrow, E. H.....Keewatin
§Luth, D. V.....Duluth
†McCoy, Mary K.....Duluth
McDonald, A. L.....Duluth
§McHaffie, O. L.....Duluth
McKenna, M. J.....Grand Rapids
McLane, W. O.....Duluth
§McLeod, J. L.....Grand Rapids
§McNutt, J. R.....Duluth
§Macfarlane, P. H.....Chisholm
§MacRae, G. C.....Duluth
§Magney, F. H.....Duluth
Magraw, R. M.....St. Paul
§Malmstrom, J. A.....Virginia
*§Manley, J. R.....Duluth
†Marcley, W. J.....Minneapolis
§Martin, W. C.....Duluth
†§Mayne, R. M.....Duluth
Mead, C. H.....Duluth
§Merriman, L. L.....Duluth
Meyer, J. O.....Grand Rapids
§Minty, E. W.....Duluth
§Moe, R. J.....Duluth
Moe, Thomas.....Moose Lake
Moehring, H. G.....Duluth
Mollers, T. P.....Soudan
Monroe, P. B.....Cloquet
Monserud, N. O.....Cloquet
*Mare, C. W.....Eveleth
§Morsman, L. W.....Hibbing
Mueller, Selma C.....Duluth
§Murray, R. A.....Hibbing
Neff, W. S.....Virginia
§Nelson, E. H.....Chisholm
Nelson, L. S.....Minneapolis
§Nelson, R. L.....Duluth
§Nicholson, M. A.....Duluth
Norberg, C. E.....Cloquet
§Nutting, R. E.....Duluth
§Olson, A. E.....Duluth
Olson, A. O.....Duluth
Palmer, H. A.....Blackduck
Papermaster, Ralph.....Two Harbors
†Parker, O. W.....Duluth
§Parker, W. H.....Chisholm
§Parson, E. I.....Duluth
Pasek, A. W.....Cloquet
§Patch, O. B.....Duluth
Patterson, S. A.....Duluth
Pearsall, R. P.....Virginia
§Pederson, R. C.....Duluth
Pennie, D. F.....Duluth
Peterson, E. N.....Virginia
Peterson, J. H.....Minneapolis
Pfuetze, K. H.....Cannon Falls
Pollard, W. H., Jr.....Duluth

§Power, J. E.....Duluth
Puumala, R. H.....Cloquet
§Raadquist, C. S.....Hibbing
§Raihala, John.....Virginia
§Raiter, R. F.....Cloquet
§Reed, Paul.....Virginia
†Robinson, J. M.....Goshen, N. Y.
§Rokala, H. E.....Virginia
§†Rood, D. C.....Duluth
Rowe, O. W.....Duluth
§Rowles, E. K.....Coleraine
§Rudie, P. S.....Duluth
§Ryan, W. J.....Duluth
Sach-Rowitz, Alvin.....Moose Lake
§Salter, R. A.....Virginia
Sandell, S. T.....Nopeming
§Sarff, O. E.....Duluth
Sax, M. H.....Duluth
Sax, S. G.....Duluth
§Schneider, L. E.....Duluth
§Schroder, C. H.....Duluth
Schweiger, T. R.....Hibbing
§Seashore, R. T.....St. Paul
Shaw, A. W.....Virginia
§Sher, D. A.....Virginia
Siegel, J. S.....Virginia
§Sinamark, Andrew.....Hibbing
Sisler, C. E.....Grand Rapids
§Smith, C. M.....Duluth
Smith, W. R.....Grand Marais
Snyker, O. E.....Ely
§Spang, A. J.....Duluth
§Spang, J. S.....Duluth
§Spicer, F. W.....Duluth
Spurbeck, R. G.....Cloquet
Strathern, M. L.....Gilbert
§Strauss, E. C.....Duluth
§Strobel, W. G.....Duluth
Stuart, A. B.....Cloquet
§Sutherland, H. N.....Ely
Swedberg, W. A.....Duluth
§Swenson, A. O.....Duluth
§Taylor, C. W.....Duluth
§Teich, K. W.....Duluth
§Terrell, B. J.....Nopeming
§Tibbetts, M. H.....Duluth
Tilderquist, D. L.....Duluth
§Tingdale, Carlyle.....Hibbing
§Tuohy, E. L.....Duluth
§Urberg, S. E.....Duluth
Van Ryzin, D. J.....Duluth
Van Valkenberg, J. D.....Floodwood

§†Walker, A. E.....Duluth
§Wallace, M. O.....Duluth
§Wells, A. H.....Duluth
Wheeler, D. W.....Duluth
Williams, B. F. P.....Duluth
Winter, J. A.....Duluth
§Young, T. O.....Duluth
†Zlatovski, M. L.....Duluth

SCOTT-CARVER COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of the alternate months
Annual meeting, June
Number of Members: 28

President
Olson, C. J.....Belle Plaine

Secretary
Schimelpfenig, G. T.....Chaska

Bodaski, A. A.....Montgomery
Bratholdt, J. W.....Watertown
§Buck, F. H.....Shakopee
§Carlson, N. C.....Watertown
§Cervenka, C. F.....New Prague
§Doherty, E. M.....New Prague

Hass, F. M.....Jordan
§Havel, H. W.....Jordan
§Hebeisen, M. B.....Chaska
§Juergens, H. M.....Belle Plaine
§Juergens, H. M.....Belle Plaine
Klein, J. C.....Shakopee
§Kortsch, F. P.....Prior Lake
§Kucera, S. T.....Lonsdale
Martin, T. P.....Arlington
Nagel, H. D.....Waconia
Nelson, K. L.....Clara City
Ninneman, N. N.....Waconia

Novak, E. E.....New Prague
Olson, C. J.....Belle Plaine
§Pearson, B. F.....Shakopee
Pearson, R. T.....Shakopee
§Ponterio, J. E.....Shakopee
*†Reiter, H. W.....Shakopee
Schimelpfenig, G. T.....Chaska
§Simons, B. H.....Chaska
§†Westerman, A. E.....Montgomery
§Westerman, F. C.....Montgomery
Wiechman, F. H.....Minneapolis
*Wunder, H. E.....Shakopee

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

Cottonwood, Jackson, Murray, Nobles, Pipestone and Rock Counties
Regular meetings, at call
Annual meeting, October
Number of Members: 61

President
Schade, F. L.....Worthington

Secretary
Mork, B. O., Jr.....Worthington

Anderson, O. W.....Luverne
§Arnold, E. W.....Adrian
§Balmer, A. I.....Pipestone
§Basinger, H. P.....Windom
Basinger, H. R.....Mountain Lake
Beckering, Gerrit.....Edgerton
§Benjamin, W. G.....Pipestone
Bofenkamp, F. W.....Luverne
†Brown, A. H.....Pipestone
Burleigh, J. S.....Luverne
§Carlson, J. V.....Westbrook
§Christiansen, H. A.....Jackson

Chunn, S. S.....Pipestone
§DeBoer, Hermanus.....Edgerton
§Doman, V. W.....Lakefield
Doms, H. C. A.....Slayton
§Hallin, R. P.....Worthington
Halloran, W. H.....Jackson
§Halpern, D. J.....Brewster
§Harrison, P. W.....Worthington
Hebbel, Robert.....Minneapolis
§Heiberg, O. M.....Worthington
§Hitchings, W. S.....Lakefield
Hoyer, L. J.....Windom
§Johnson, M. A.....Storden
§Johnson, R. M.....Slayton
Kabrick, O. A.....Jackson
§Karleen, B. N.....Jackson
§Kilbride, E. A.....Worthington

†Kilbride, J. S.....Worthington
§Laikola, L. A.....Adrian
§Lohmann, J. G.....Pipestone
§Maitland, E. T.....Jackson
†Manson, F. M.....Worthington
§Mork, B. O., Sr.....Worthington
§Mork, B. O., Jr.....Worthington
§Nealy, D. E.....Adrian
§Nickerson, J. R.....Heron Lake
§Pankratz, P. J.....Mountain Lake
§Patterson, H. D.....Slayton
§Pierson, R. F.....Slayton
§Piper, W. A.....Mountain Lake
Rogers, C. W.....Minneapolis
§Rose, J. T.....Lakefield
§Schade, F. L.....Worthington
§Schmidt, W. R.....Worthington

§Schutz, E. S.....Mountain Lake
Sherman, C. L.....Luverne
§Slater, S. A.....Worthington
§Sogge, L. L.....Windom
§Sorum, F. T.....Jasper

§Stam, John.....Worthington
Stanley, C. R.....Worthington
Stevenson, B. M.....Fulda
Stratte, H. C.....Windom
Waller, J. D.....Pine City

§Wells, W. B.....Jackson
§Williams, C. A.....Pipestone
Williams, L. A.....Minneapolis
§Williamson, H. A.....Heron Lake
Wolff, Helen B.....Worthington

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Regular meetings, third Thursday of month
Annual meeting, third Thursday of December
Number of Members: 59

President
Zachman, A. H.....Melrose

Secretary
Libert, J. N.....St. Cloud

§Baumgartner, F. H.....Albany
Beuning, J. B.....St. Cloud
Brigham, C. F.....St. Cloud
§Buscher, J. C.....St. Cloud
§Clark, H. B.....St. Cloud
Cleaves, W. D.....Sauk Center
§Conway, J. E.....St. Cloud
§Donaldson, C. S.....Foley
Du Bois, J. F.....Sauk Center
Emerson, E. E.....Osakis
Engstrom, G. F.....Belgrade
§Evans, L. M.....Sauk Rapids
§Fleming, T. N.....St. Cloud
§Friesleben, William.....Sauk Rapids
§Gaida, J. B.....St. Cloud
§Goehrs, G. H.....St. Cloud

Goehrs, H. W.....St. Cloud
§Grant, J. C.....Sauk Center
§Haberman, Emil.....Osakis
§Halenbeck, P. L.....St. Cloud
§Hall, W. E.....Maple Lake
†Hemstead, Werner.....Fergus Falls
§Henry, C. J.....Milaca
§Jones, R. N.....St. Cloud
§Kelly, J. F.....Cold Springs
Kettlewell, R. B.....Sauk Center
§Kohler, D. W.....St. Joseph
§Koop, S. H.....Richmond
Kuhlman, L. B.....Melrose
Lewis, C. B.....St. Cloud
§Libert, J. N.....St. Cloud
§Luckemeyer, C. J.....St. Cloud
§McDowell, J. P.....St. Cloud
§Mahowald, A.....Albany
Meyer, A. A.....Melrose
§Milhaupt, E. N.....St. Cloud
§Murphy, James E.....St. Cloud

Musachio, N. F.....Foley
Myre, C. R.....Paynesville
§Nessa, C. B.....St. Cloud
§O'Keefe, J. P.....St. Cloud
O'Leary, J. H.....Foley
§Petersen, R. T.....St. Cloud
§Raetz, S. J.....Maple Lake
§Richards, W. B.....St. Cloud
§Reif, H. J.....St. Cloud
§Sandven, N. O.....Paynesville
§Schatz, F. J.....St. Cloud
§Schmitz, E. J.....Holdingford
Sherwood, G. E.....Kimball
Stangl, P. E.....St. Cloud
§Stenerrodden, S. C.....St. Cloud
Stewart, N. E.....St. Petersburg, Fla.
Veranth, L. A.....St. Cloud
§Walfred, K. A.....St. Cloud
§Wenner, W. T.....St. Cloud
§Wetzel, E. V.....St. Cloud
§Wittrock, L. H.....Watkins
Zachman, A. H.....Melrose

STEELE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, January
Number of Members: 17

President
Stransky, T. W.....Owatonna

Secretary
Olson, A. J.....Owatonna

Berghs, L. V.....Owatonna
Dewey, D. H.....Owatonna

Ertel, E. O.....Ellendale
§Hartung, E. H.....Claremont
Kurtin, H. J.....Blooming Prairie
Lundquist, C. W.....Owatonna
McEnaney, C. T.....Owatonna
McIntyre, J. A.....Owatonna
Melby, Benedik.....Blooming Prairie

Moorhead, D. E.....Owatonna
§Nelson, E. J.....Owatonna
Olson, A. J.....Owatonna
Roberts, O. W.....Owatonna
Schaefer, J. F.....Owatonna
Senn, E. W.....Owatonna
Stransky, T. W.....Owatonna
§Wilkowske, R. J.....Owatonna

UPPER MISSISSIPPI MEDICAL SOCIETY

Aitkin, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Koochiching,
Lake of the Woods, Morrison, Todd and Wadena Counties
Regular meetings, Spring, Summer, Fall, Winter
Annual meeting, February
Number of Members: 101

President
Garlock, D. H.....Bemidji

Secretary
Badeaux, G. I.....Brainerd

Adkins, G. H.....Pine River
§Amundson, A. E.....Little Falls
Anderson, F. C.....Little Falls
§Badeaux, G. I.....Brainerd
§Becker, S. F.....Bemidji
§Beise, R. A.....Brainerd
§Bender, J. H.....Brainerd
§Borgerson, A. H.....Long Prairie
Cardle, G. E.....Brainerd
Christie, R. L.....Long Prairie
§Closuit, F. C.....Aitken
Cook, J. M.....Staples
Coombs, C. H.....Cass Lake
†Corrigan, J. E.....Spooner
Craig, C. C.....International Falls
§Crow, E. R.....Ah-Gwah-Ching
§Dale, L. N.....Crosby
Davis, L. F.....Wadena
Davis, L. T.....Wadena
Davis, T. C.....Wadena
Davis, T. L.....Wadena
§Dewesse, W. J.....Bemidji
Dodds, W. C.....Detroit Lakes
Eiler, John.....Park Rapids
§Erickson, Alvin.....Long Prairie
Fait, R. V.....Little Falls
§Fearing, James E.....Pequot Lakes
Fine, B. A.....Crosby
§Fitzsimmons, W. E.....Brainerd
Fortier, G. M. A.....Wadena
Friefeld, Saul.....Wadena

§Garlock, A. V.....Bemidji
Garlock, D. H.....Bemidji
Gerber, M. P.....Brainerd
Ghostley, Mary C.....Puposky
†Gilmore, Rowland.....Bemidji
Grogan, J. S.....Wadena
Groschupf, T. P.....Bemidji
Grose, F. N.....Clarissa
Halladay, G. I.....Brainerd
Hanover, R. D.....Little Fork
Healy, R. T.....Pierz
Hendricks, E. J.....Verndale
Higgs, W. W.....Park Rapids
Hoganson, D. E.....Bemidji
†House, Z. E.....Cass Lake
§Houston, D. M.....Park Rapids
§Hubbard, O. E.....Brainerd
Idstrom, L. G.....Wayzata
Jamieson, E. F.....Brainerd
†Johnson, C. E.....Pine River
Johnson, D. I.....Little Falls
Johnson, E. W.....Bemidji
Kinports, E. B.....International Falls
Knight, E. G.....Swanville
Krieser, A. E.....Ah-Gwah-Ching
Larson, Leroy.....Bagley
Laughlin, J. T.....Grey Eagle
§Lee, H. W.....Brainerd
Leemhuis, G. H.....Aitken
§Lenarz, A. J.....Browerville
Longfellow, Helen B.....Brainerd
Lund, W. J.....Staples
Mark, Hilbert.....Minneapolis
McCann, D. F.....Bemidji
§Mitby, I. L.....Aitkin

Monahon, R. H., Jr.....International Falls
§Mosby, M. E.....Long Prairie
§Mulligan, A. M.....Brainerd
Nelson, Bernette G.....Menahga
Nelson, Bernice A.....Northome
Nelson, N. P.....Brainerd
§Nixon, James B.....Crosby
Nolan, D. E.....Dayton, Ohio
§Parker, Warren E.....Sebeka
Petraborg, Harvey T.....Aitkin
Pierce, C. H.....Wadena
Potek, D. M.....International Falls
§Quanstrom, V. E.....Brainerd
†Ratcliffe, J. J.....Aitkin
Rice, H. G.....Aitkin
Ringle, O. F.....Walker
§Sanderson, A. G.....Deerwood
§Simons, E. J.....Swanville
§Smith, B. A.....Crosby
Stafford, C. E.....Baudette
§Stein, R. J.....Pierz
§Thabes, J. A., Sr.....Brainerd
Thabes, J. A., Jr.....Brainerd
Vandersluis, C. W.....Bemidji
§Watson, A. M.....Royalton
†Watson, J. D.....Minneapolis
Watson, P. T.....Minneapolis
§Watson, S. W.....Royalton
Whittemore, D. D.....Bemidji
§Will, C. B.....Bertha
§Will, W. W.....Bertha
§Williams, M. M.....Ah-Gwah-Ching
Wilson, V. O.....Minneapolis
Wingquist, C. G.....Crosby
Withrow, M. E.....International Falls

WABASHA COUNTY MEDICAL SOCIETY

Regular meetings, Spring and Fall
Annual meeting, first Thursday after first Monday in October
Number of Members: 15

President
Bowers, R. N.....Lake City

Secretary
Wilson, W. F.....Lake City

§Bayley, E. C.....Lake City

§Bouquet, B. J.....Wabasha
§Bowers, R. N.....Lake City
Collins, J. S.....Wabasha
§Ekstrand, L. M.....Wabasha
§Ellis, E. W.....Elgin
§Flesche, B. A.....Lake City
§Gjerde, W. P.....Lake City

Glabe, R. A.....Plainview
Holt, G. W.....Hastings
§Mahle, D. G.....Plainview
§Ochsner, C. G.....Wabasha
Replogle, W. H.....Wabasha
§Wellman, T. G.....Lake City
†Wilson, W. F.....Lake City

WASECA COUNTY MEDICAL SOCIETY

Regular meetings, every six months
Annual meeting, January
Number of Members: 8

President
Hottinger, R. C. ..... Janesville

Secretary
Wadd, C. T. ..... Janesville

§Davis, R. D. ..... Waseca
§Gallagher, B. J. ..... Waseca
§Hottinger, R. C. ..... Janesville
§McIntire, H. M. ..... Waseca
§Oeljen, S. C. G. ..... Waseca
§Olds, G. H. ..... New Richland
§Swenson, O. J. ..... Waseca
§Wadd, C. T. ..... Janesville

WASHINGTON COUNTY MEDICAL SOCIETY

Regular meetings, Second Tuesday in each month, except June, July, August
Annual meeting, second Tuesday in December
Number of Members: 16

President
Stuhr, J. W. ..... Stillwater

Secretary
Boleyn, E. S. ..... Stillwater

§Boleyn, E. S. ..... Stillwater
Burseth, E. F. ..... Forest Lake

§Carlson, R. E. ..... Stillwater
§†Haines, J. H. ..... Stillwater
Holcomb, J. T. ..... Marine-on-St. Croix
Humphrey, W. R. ..... Stillwater
§Johnson, R. G. ..... Stillwater
§Josewski, R. J. ..... Stillwater
§McCarten, F. M. ..... Stillwater
Poirier, J. A. ..... Forest Lake
Ruggles, G. M. ..... Forest Lake
§Samson, E. R. ..... Stillwater
§Sherman, C. H. ..... Bayport
§Stuhr, J. W. ..... Stillwater
Thompson, V. C. ..... Marine-on-St. Croix
Van Meier, Henry ..... Stillwater

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Pope, Stevens, and Traverse Counties
Regular meetings, March, May, September and November
Annual Meeting, September
Number of Members: 30

President
Merrill, Robert ..... Morris

Secretary
Rydburg, W. C. ..... Brooten

§Arneson, A. I. ..... Morris
§Behmler, F. W. ..... Morris
§Bergan, Otto ..... Clinton
†Bolsta, Charles ..... Ortonville
§Dahle, M. B. ..... Glenwood
§†Elberlin, E. A. ..... Glenwood

§Elsey, E. M. ..... Glenwood
†Elsey, J. R. ..... Glenwood
Fitzgerald, E. T. ..... Morris
§Gericke, J. T. ..... Glenwood
§Giesen, A. F. ..... Starbuck
Hedemark, H. H. ..... Ortonville
Hedemark, T. A. ..... Ortonville
§Karn, B. R. ..... Ortonville
§Karn, J. F. ..... Ortonville
Lindberg, A. L. ..... Wheaton
§†Linde, Herman ..... Cyrus
Magnuson, A. E. ..... Wheaton
McIver, B. A. ..... Lowry
§Merrill, R. W. ..... Morris
§Mooney, L. P. ..... Graceville
Muir, W. F. ..... Browns Valley
§O'Donnell, D. M. ..... Ortonville
§Oliver, I. L. ..... Graceville
Ransom, M. L. ..... Hancock
§Rossberg, Raymond A. ..... Morris
§Rydburg, W. C. ..... Brooten
§Swedenberg, Paul A. ..... Glenwood
Turbak, C. E. ..... Herman
Wagner, N. W. ..... Graceville

WINONA COUNTY MEDICAL SOCIETY

Regular meetings, first Monday in January, April, July, October
Annual meeting, first Monday in January
Number of Members: 33

President
Younger, L. I. ..... Winona

Secretary
Heise, Paul ..... Winona

§Benoit, F. T. ..... Winona
§Boardman, D. V. ..... Winona
§Canfield, W. W. ..... Houston
§Christensen, E. E. ..... Winona
§Hamlon, J. S. ..... St. Charles
§Heise, Herbert ..... Winona
§Heise, Paul ..... Winona

§Heise, Philip ..... Winona
§†Heise, W. F. C. ..... Winona
§Heise, W. V. ..... Winona
§Johnston, L. F. ..... Winona
Keyes, J. D. ..... Winona
§Loomis, G. L. ..... Winona
§Mattison, P. A. ..... Winona
McLaughlin, E. M. ..... Winona
§Meinert, A. E. ..... Winona
§Nauth, B. S. ..... Winona
Neumann, C. A. ..... Winona
§Page, R. L. ..... St. Charles
§†Robbins, C. P. ..... Winona
§Roemer, H. J. ..... Winona
§Rogers, C. W. ..... Winona
§Roth, F. D. ..... Lewiston
§Satterlee, H. W. ..... Lewiston
§Schaefer, Samuel ..... Winona
§Schmidt, Hilmar ..... Wilmar
§Steiner, I. W. ..... Winona
§†Tweedy, G. J. ..... Winona
Tweedy, J. A. ..... Winona
§Tweedy, R. B. ..... Winona
§Vollmer, F. J. ..... Winona
§Wilson, R. H. ..... Winona
§Younger, L. I. ..... Winona

WRIGHT COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, October
Number of Members: 18

President
Roholt, H. B. ..... Waverly

Secretary
Catlin, J. J. ..... Buffalo

§Anderson, W. P. ..... Buffalo
§Bendix, L. M. ..... Annandale

§Catlin, J. J. ..... Buffalo
§Catlin, T. J. ..... Buffalo
§Ellison, F. E. ..... Monticello
§Greenfield, W. T. ..... Delano
Grundset, O. J. ..... Montrose
Guilfoile, P. J. ..... Delano
Harriman, Leonard ..... Howard Lake
§Hart, W. E. ..... Monticello
Peterson, O. L. ..... Cokato
Raetz, S. J. ..... Maple Lake
§Ridgway, A. M. ..... Annandale
§Roholt, C. L. ..... Waverly
Roholt, H. B. ..... Waverly
Swezey, B. F. ..... Buffalo
§Thielen, R. D. ..... St. Michael
§Thompson, Arthur ..... Cokato

Alphabetic Roster

Key to Symbols: *Deceased; †Affiliate, Associate or Life Member; ‡In Service;

Aagaard, G. N., Jr.....Minneapolis
Aanes, A. M.....Red Wing
Aborn, W. H.....Hawley
Abraham, A. L.....Duluth
Abramson, Milton.....Minneapolis
Ackerman, R. F.....Rochester
Adair, A. F., Jr.....St. Paul
Adams, B. S.....Hibbing
Adams, R. C.....Bird Island
Adams, Richard C.....Rochester
Addy, E. R.....Gilbert
Adkins, C. D.....Minneapolis
Adkins, C. M.....Thief River Falls
Adkins, G. H.....Pine River
Adler, B. C.....St. Paul
Adson, A. W.....Rochester
Affeldt, D. E.....Kasson
Ahern, E. E.....Minneapolis
Ahern, Gerald S.....Rochester
Ahlfs, J. J.....Caledonia
Ahrens, A. E.....St. Paul
Ahrens, A. H.....St. Paul
†Aitkins, H. B.....LeCenter
Akester, Ward.....Fergus Falls
Akins, W. M.....Red Wing
Albrecht, H. H.....Chisago City
*Alden, John F.....St. Paul
Alden, John F., Jr.....St. Paul
Aldrich, C. A.....Rochester
Alexander, H. A.....Minneapolis
Alger, E. W.....Minneapolis
Aling, C. A.....Minneapolis
*†Aling, Chas. P.....Minneapolis
Allen, C. S.....Rochester
Allen, E. V. N.....Rochester
Allen, H. B.....Austin
Allen, Horace E.....Rochester
Altman, Richard F.....Minneapolis
Altnow, H. O.....Minneapolis
Alvarez, W. C.....Rochester
Amberg, Samuel.....Rochester
Amundsen, A. E.....Little Falls
*Andersen, A. G.....Minneapolis
Andersen, H. A.....Rochester
Andersen, S. C.....Minneapolis
Anderson, C. A.....Winsted
Anderson, C. D.....Chicago, Ill.
Anderson, C. L.....Ely
Anderson, D. D.....Minneapolis
Anderson, Donald.....Lamberton
Anderson, D. P., Jr.....Austin
Anderson, E. D.....Minneapolis
Anderson, E. R.....Minneapolis
Anderson, F. C.....Little Falls
Anderson, F. J.....Minneapolis
Anderson, H. R.....Rochester
Anderson, J. K.....Minneapolis
Anderson, J. R.....Rochester
Anderson, K. W.....Minneapolis
Anderson, M. C.....Minneapolis
Anderson, M. E., Jr.....Rochester
Anderson, M. J.....Rochester
Anderson, M. W.....Rochester
Anderson, O. W.....Luverne
Anderson, R. E.....Willmar
Anderson, R. E.....Rochester
Anderson, S. H.....Red Wing
Anderson, U. S.....Minneapolis
Anderson, W. P.....Buffalo
Anderson, W. E.....Clearbrook
Anderson, W. T.....Minneapolis
Andreassen, E. C.....Minneapolis
Andrejek, A. R.....Madison
Andresen, K. D.....Minneapolis
Andrews, R. N.....Mankato
Andrews, R. S.....Minneapolis
Arends, A. L.....Moose Lake
Arey, S. L.....Minneapolis
†Arhelger, Stuart.....Freeborn
Arko, J. L.....Hibbing
Arlander, C. E.....Minneapolis
Arling, L. S.....Minneapolis
Arling, P. A.....Rochester
Armstrong, F. I.....Duluth
Armstrong, R. S.....Winnebago
Arndt, H. W.....Detroit Lakes
Arneson, A. I.....Morris
Arneson, J. F.....Rochester
Arnold, Anna W.....Minneapolis
Arnold, D. C.....Minneapolis
Arnold, E. W.....Adrian
Arnquist, A. S.....St. Paul
Arnson, J. M.....Benson
Arny, F. P.....St. Paul
Arvidson, C. G.....Minneapolis
Arzt, P. K.....St. Paul
‡Ashburn, F. S.....Rochester
Ashley, W. F.....Rochester
Athens, A. G.....Duluth
Aune, Martin.....Minneapolis
†Aurand, W. H.....Minneapolis
Aurelius, J. R.....St. Paul
Ausman, C. F.....St. Paul
Avrick, Alan M.....Onamia
*†Ayres, G. T.....Ely

Babb, F. S.....St. Paul
Bachnik, F. W.....Hibbing
Backus, R. W.....Nopeming
Bacon, D. K.....St. Paul
†Bacon, L. C.....St. Paul
Badby, G. W.....Cannon Falls
Badeaux, G. I.....Brainerd
Baggenstoss, A. H.....Rochester
Bagley, C. M.....Duluth
Bagley, Elizabeth C.....Duluth
Bagley, W. R.....Duluth
Baich, V. M.....Bovey
Bailey, Allen A.....Rochester
Bailey, J. A.....Rochester
Bailey, J. H.....Rochester
Bailey, R. B.....Fairmont
Bair, H. L.....Rochester
Baird, J. W.....Minneapolis
Baken, M. P.....Minneapolis
Baker, A. B.....Minneapolis
Baker, A. C.....Fergus Falls
Baker, A. T.....Minneapolis
Baker, C. E.....Fergus Falls
Baker, E. L.....Minneapolis
Baker, G. S.....Rochester
Baker, H. R.....Hayfield
Baker, Jeannette L.....Fergus Falls
†Baker, Looe.....Minneapolis
Baker, N. H.....Fergus Falls
Baker, R. L.....Hayfield
Bakkila, H. E.....Duluth
Balcome, M. M.....St. Paul
Balfour, D. C.....Rochester
Balfour, D. C., Jr.....Rochester
Balfour, W. M.....Rochester
Balkin, S. G.....Minneapolis
Balmer, A. I.....Pipestone
Bank, H. E.....Portland, Oregon
Banner, Edw. A.....Rochester
Barber, J. P.....Minneapolis
Barber, T. E.....Austin
Bardon, Richard.....Duluth
Bargen, I. A.....Rochester
Barger, J. D.....Rochester
Barker, J. D.....Duluth
Barker, N. W.....Rochester
Barnes, A. R.....Rochester
Barnes, B. C.....Rochester
Barnett, J. M.....St. Paul
Barney, L. A.....Duluth
Barr, L. C.....Albert Lea
Barr, M. M.....Rochester
Barr, R. N.....St. Paul
Barr, W. H.....Wells
Barrett, E. E.....Duluth
Barron, Moses.....Minneapolis
Barry, L. W.....St. Paul
Barsness, Nellie O. N.....St. Paul
Barton, J. C.....St. Paul
Basinger, H. P.....Windom
Basinger, H. R.....Mountain Lake
Batdorf, B. N.....Good Thunder
Bateman, J. G.....Rochester
Bateman, O. A. L.....Rochester
Bauer, E. L.....Rochester
Baumgartner, F. H.....Albany
Baxter, S. H.....Minneapolis
Bayard, H. F.....Minneapolis
Bayley, E. C.....Lake City
Bayrd, E. D.....Rochester
Beach, Northrup.....Minneapolis
Beahrs, O. H.....Rochester
†Beals, Hugh.....St. Paul
†Beard, A. H.....Minneapolis
‡Bearzy, H. J.....Rochester
Bechtel, M. J.....Warren
Beck, N. R.....Salt Lake City, Utah
Becker, F. T.....Duluth
Becker, S. F.....Bemidji
Beckering, Gerrit.....Edgerton
†Beckman, W. G.,Palo Alto, California
Bedford, E. W.....Minneapolis
Beech, R. H.....St. Paul
Beek, H. O.....St. Paul
Beeler, J. W.....Rochester
Beer, J. J.....St. Paul
Behmler, F. W.....Morris
Behr, O. K.....Crookston
Beise, R. A.....Brainerd
Beiswanger, R. H.....Minneapolis
Bell, C. C.....St. Paul
†Bell, E. T.....Minneapolis
Bellville, T. P.....Minneapolis
Belote, G. B.....Caledonia
Belshe, J. C.....Northfield
Belzer, M. S.....Minneapolis
Bender, J. H.....Brainerd
Bendix, L. H.....Annandale
Benedict, W. L.....Rochester
Benepe, J. L.....St. Paul
Benesh, L. A.....Minneapolis
*Benesh, N. G.....Minneapolis
Benjamin, A. E.....Minneapolis
Benjamin, E. G.....Minneapolis
Benjamin, H. G.....Minneapolis
Benjamin, W. G.....Pipestone
Benn, F. G.....Minneapolis
Bennett, J. K.....Rochester
Bennett, W. A.....Rochester
Benoit, F. T.....Winona
Bentley, N. P.....St. Paul
Bentson, J. A.....Rochester
Bepko, Marie K.....Cloquet
Berdez, G. L.....Duluth
Bergan, Otto.....Clinton
Bergan, R. O.....Duluth
Berge, D. O.....Roseau
Berger, A. G.....Minneapolis
Bergh, G. S.....Minneapolis
Bergh, L. N.....Montevideo
Bergh, Solveig, M.....Minneapolis
Berghs, L. V.....Owatonna
Bergman, O. B.....St. James
Bergquist, K. E.....Battle Lake
Berkman, D. M.....Rochester
Berkman, D. S.....Rochester
Berkman, J. M.....Rochester
Berkwitz, N. J.....Minneapolis
Berlin, A. S.....Hallock
Berman, Reuben.....Minneapolis
Bernstein, W. C.....St. Paul
†Bertelson, Oskar L.....Crookston
Bessesen, A. N., Jr.....Minneapolis
Bessessen, D. H.....Minneapolis
Bessessen, W. A.....Minneapolis
Beuning, J. B.....St. Cloud
Bianco, A. J.....Duluth
Bicek, J. F.....St. Paul
Bickel, W. H.....Rochester
Biedermann, Jacob..Thief River Falls
Bieter, R. N.....Minneapolis
Bigelow, C. E.....Dodge Center
Bigler, I. E.....Perham
Bilka, P. J.....Rochester
Billings, R. E.....Franklin
†Binet, H. E.....Grand Rapids
Binger, H. E.....St. Paul
Biorn, C. L.....Rochester
Black, B. M.....Rochester
Black, E. J.....St. Paul
Black, W. A.....New Ulm
Blackburn, C. M.....Rochester
Blackmore, S. C.....Biwabik
Blake, A. J.....Hopkins
Blake, James.....Hopkins
Blake, James A.....Hopkins
†Blake. P. S.....Minneapolis
Blakey, A. R.....Osakis
Bloedel, T. J. G.....Osseo
Bloemendaal, E. J. G.....Lake Park
Blomberg, W. R.....Princeton
Blumenthal, J. S.....Minneapolis
Blunt, C. P., III.....Rochester
Boardman, D. V.....Winona
Bock, R. A.....St. Paul
Bockman, M. W. H.....Minneapolis
Bodaski, A. A.....Le Center
Boeckmann, Egil.....St. Paul
Boehrer, J. J., Jr.....Minneapolis
Bofenkamp, F. W.....Luverne
Boies, L. R.....Minneapolis
Bolender, H. L.....St. Paul
Boleyn, E. S.....Stillwater
Boline, C. A.....Battle Lake
†Bolsta, Charles.....Ortonville
Bolz, J. A.....Grand Rapids

Boman, P. G. ..... Duluth
Boody, G. J., Jr. ..... Dawson
†Booth, A. E. ..... Minneapolis
Boothby, W. M. ..... Rochester
Boreen, C. A. ..... Minneapolis
Booren, J. C. ..... Duluth
Borg, J. F. ..... St. Paul
Borgerson, A. H. ..... Long Prairie
Borgeson, E. J. ..... Minneapolis
Borman, C. N. ..... Minneapolis
Borowicz, L. A. ..... New York
Bosland, H. G. ..... Willmar
Bossert, C. S. ..... Mora
Botha, E. K. ..... Rochester
Bottolfson, B. T. ..... Moorhead
Bouma, L. R. ..... St. Paul
Bouquet, B. J. ..... Wabasha
Bourget, G. E. ..... Detroit Lakes
Bowen, R. L. ..... Hibbing
Bowers, G. G. ..... Minneapolis
Bowers, R. N. ..... Lake City
Bowing, H. H. ..... Rochester
Boyd, L. M. ..... Alexandria
Boyer, S. H. ..... Duluth
Boyer, S. H., Jr. ..... Duluth
Boylan, R. N. ..... Rochester
Boynton, Bruce ..... Ada
Boynton, Ruth E. ..... Minneapolis
Boysen, Herbert ..... Madelia
Braasch, W. F. ..... Rochester
Braastad, F. W. ..... Rochester
Brady, J. A. ..... Rochester
Brand, G. D. ..... St. Paul
Brand, W. A. ..... Redwood Falls
Brandes, R. W. ..... Rochester
Branham, D. S. ..... Albert Lea
Branton, A. F. ..... Chattanooga 3, Tenn.
Branton, B. J. ..... Willmar
Bratholdt, J. W. ..... Watertown
Bratrud, A. F. ..... Minneapolis
Bratrud, Edward ..... Thief River Falls
Bratrud, T. E. ..... Thief River Falls
Bratrude, E. J. ..... St. James
Braun, O. C. ..... Nashwauk
Bray, E. R. ..... St. Paul
Bray, P. N. ..... Duluth
Bray, R. B. ..... Biwabik
Bregel, F. L. ..... St. James
Brekke, H. J. ..... Minneapolis
Briggs, J. F. ..... St. Paul
Brigham, C. F. ..... St. Cloud
Brilhart, K. B. ..... Rochester
Brill, Alice K. ..... Minneapolis
Brink, A. A. ..... Baudette
Brink, D. M. ..... Hutchinson
Broadie, T. E. ..... St. Paul
Broders, A. C. ..... Rochester
Brodie, W. D. ..... St. Paul
Brooker, W. J. ..... Duluth
Brooks, C. N. ..... Minneapolis
Brooks, L. M. ..... Rochester
Brooksby, W. A. ..... Rochester
Brown, A. E. ..... Rochester
†Brown, A. H. ..... Pipestone
†Brown, E. D. ..... Paynesville
Brown, F. J. ..... Minneapolis
Brown, G. E., Jr. ..... Rochester
Brown, H. A. ..... Rochester
Brown, H. S. ..... Rochester
Brown, J. C. ..... St. Paul
Brown, J. R. ..... Minneapolis
Brown, L. L. ..... Crookston
Brown, P. W. ..... Rochester
†Brown, S. P. ..... Minneapolis
Brown, W. D. ..... Minneapolis
Browning, W. H. ..... Rochester
Brownson, B. C. ..... Rochester
Brunsting, L. A. ..... Rochester
Brusegaard, J. F. ..... Red Wing
Brutsch, G. C. ..... Minneapolis
Bryan, A. L. ..... San Diego, Calif.
Buchstein, H. F. ..... Minneapolis
Buck, F. H. ..... Shakopee
Buckley, R. P. ..... Duluth
Buie, Louis A. ..... Rochester
Buirge, R. E. ..... Minneapolis
Bulinski, T. J. ..... St. Paul
Bulkley, Kenneth ..... Minneapolis
Bunker, B. W. ..... Anoka
Burch, E. P. ..... St. Paul
Burch, F. E. ..... St. Paul
Burchell, H. B. ..... Rochester
Burleigh, J. S. ..... Luverne
Burlingame, D. A. ..... St. Paul
Burmeister, R. O. ..... Welcome
Burnap, W. L. ..... Fergus Falls
Burnham, W. H. ..... Minneapolis
Burns, C. ..... Duluth
Burns, F. M. ..... Milan
Burns, H. A. ..... Anoka
Burns, M. A. ..... Milan
Burns, R. M. ..... St. Paul
Burseth, E. C. ..... Forest Lake
Burton, C. G. ..... St. Paul
Buscher, J. C. ..... St. Cloud

Bush, R. P. ..... Rochester
Bushard, W. J. ..... Minneapolis
Busher, H. H. ..... St. Paul
Butler, D. B. ..... Rochester
Butler, J. K. ..... Carlton
Butt, H. R. ..... Rochester
Butturff, C. R. ..... Freeborn
Butzer, J. A. ..... Mankato
Buzzelle, L. K. ..... Minneapolis

Cable, M. L. ..... Minneapolis
Cabot, C. M. ..... Minneapolis
Cabot, V. S. ..... Minneapolis
Cady, L. H. ..... Minneapolis
Cain, C. L. ..... St. Paul
Cain, J. C. ..... Rochester
Cain, J. H. ..... Hoffman
Cairns, R. J. ..... Redwood Falls
Calhoun, F. W. ..... Albert Lea
Callaghan, M. F. ..... Canada
Callahan, F. F. ..... St. Paul
Callerstrom, G. W. ..... Minneapolis
Cameron, Isabell L. ..... Minneapolis
Cameron, J. H. ..... Crookston
Cameron, J. M. ..... Rochester
Camp, J. D. ..... Rochester
Camp, W. E. ..... Minneapolis
Campbell, D. C. ..... Rochester
Campbell, L. M. ..... Minneapolis
Campbell, O. J. ..... Minneapolis
Canfield, Albert ..... Thief River Falls
Canfield, W. W. ..... Winona
Cantwell, W. F. ..... International Falls
Cardle, A. E. ..... Minneapolis
Cardle, G. E. ..... Brainerd
Carey, J. B. ..... Minneapolis
Carlander, L. W., Jr. ..... Rochester
Carley, W. A. ..... St. Paul
Carlson, A. E. ..... Warren
Carlson, C. E. ..... Alexandria
Carlson, J. V. ..... Westbrook
Carlson, Lawrence ..... Minneapolis
Carlson, L. T. ..... Minneapolis
Carlson, N. C. ..... Watertown
Carlson, R. E. ..... Stillwater
Carman, J. E. ..... Detroit Lakes
Carmona, M. G. ..... Rochester
Caron, R. P. ..... Minneapolis
Carpenter, R. E. ..... Rochester
Carr, D. T. ..... Rochester
Carroll, W. C. ..... St. Paul
Carryer, H. M. ..... Rochester
Carter, H. G. ..... Minneapolis
Carter, J. W., Jr. ..... Rochester
*Carstens, C. F. ..... Hibbing
Caspers, C. G. ..... Minneapolis
Catlin, I. J. ..... Buffalo
Catlin, T. J. ..... Buffalo
Cavanor, F. T. ..... Minneapolis
Ceder, E. T. ..... Minneapolis
Ceplecha, S. F. ..... Redwood Falls
Cervenka, C. F. ..... New Prague
Chadbourn, C. R. ..... St. Paul
Challman, S. A. ..... Minneapolis
Chambers, W. C. ..... Blue Earth
Chapman, C. B. ..... Minneapolis
Chapman, C. E. ..... Rochester
Chapman, J. P., Jr. ..... Rochester
Chapman, T. L. ..... Duluth
Chatterton, C. C. ..... St. Paul
Chermak, F. G. ..... International Falls
Chesley, A. J. ..... Minneapolis
Childs, D. S., Jr. ..... Rochester
Chisholm, T. C. ..... Minneapolis
Chlad, A. J. ..... St. Paul
Christensen, C. H. ..... Duluth
Christensen, E. E. ..... Winona
Christensen, N. A. ..... Rochester
Christenson, G. R. ..... Minneapolis
Christiansen, Andrew ..... St. Paul
Christiansen, H. A. ..... Jackson
Christianson, H. W. ..... Minneapolis
Christie, R. L. ..... Long Prairie
Christoferson, Lee A. ..... Rochester
Chunn, S. S. ..... Pipestone
Clagett, O. T. ..... Rochester
Clark, F. H. ..... Rochester
Clark, H. B. ..... St. Cloud
Clark, H. B., Jr. ..... St. Paul
Clark, I. T. ..... Duluth
Clark, L. W. ..... Spring Valley
Clarke, E. K. ..... Minneapolis
Clarke, E. T. ..... Buhl
Clarkson, Wm. R. ..... Rochester
Clay, L. B. ..... Minneapolis
Claydon, H. F. ..... Red Wing
†Claydon, L. E. ..... Red Wing
Cleaves, W. D. ..... Sauk Centre
Clifford, G. W. ..... Alexandria
Clifton, T. A. ..... Chatfield
Closuit, F. C. ..... Aitkin
Clothier, E. F. ..... Elk River
Cluxton, H. E., Jr. ..... Hot Springs, Ark.
Cochrane, B. B. ..... St. Paul
Cochrane, R. F. ..... Minneapolis

Coddon, W. D. ..... St. Paul
Cohen, B. A. ..... Minneapolis
Cohen, S. S. ..... Minneapolis
Colby, W. L. ..... St. Paul
Cole, Frank ..... Duluth
Cole, W. H. ..... St. Paul
Coll, J. J. ..... Duluth
Collet, R. W. ..... Rochester
†Collie, H. G. ..... St. Paul
Collins, A. N. ..... Duluth
†Collins, H. C. ..... Duluth
Collins, J. S. ..... Wabasha
Colp, E. A. ..... Minneapolis
*Colvin, A. R. ..... St. Paul
Combacker, L. C. ..... Fergus Falls
Comfort, M. W. ..... Rochester
Condit, W. H. ..... Minneapolis
Conley, F. W. ..... Rochester
*Conner, H. M. ..... Rochester
Connery, D. B. ..... Rochester
Connolly, C. J. ..... St. Paul
Connor, C. E. ..... St. Paul
Conway, J. E. ..... St. Cloud
Cook, E. K. ..... St. Paul
Cook, E. N. ..... Rochester
Cook, J. M. ..... Staples
Coombs, C. H. ..... Cass Lake
Cooper, C. C. ..... St. Paul
Cooper, J. P. ..... Excelsior
Cooper, M. D. ..... Winnebago
Cooper, Talbert ..... Rochester
Corbett, J. F. ..... Minneapolis
Corbin, K. B. ..... Rochester
Corcoran, C. E., Jr. ..... Rochester
Corniea, A. D. ..... Minneapolis
Correa, D. H. ..... Minneapolis
†Corrigan, J. E. ..... Spooner
Cosgriff, J. A. ..... Olivia
Coulter, H. E. ..... Madelia
Counseller, V. S. ..... Rochester
Countryman, R. S. ..... St. Paul
Covell, W. W. ..... St. Peter
Coventry, M. B. ..... Rochester
Coventry, W. A. ..... Duluth
Coventry, W. D. ..... Duluth
Covey, K. W. ..... Mahnomen
Cowan, D. W. ..... Minneapolis
†Cowern, E. W. ..... No. St. Paul
Crabtree, J. C. ..... Princeton
Craig, C. C. ..... International Falls
Craig, D. M. ..... St. Paul
Craig, W. McK. ..... Rochester
Cranmer, R. R. ..... Minneapolis
†Cranston, R. W. ..... Minneapolis
Creevy, C. D. ..... Minneapolis
Creighton, R. H. ..... Minneapolis
*Crewe, J. E. ..... Rochester
Critchfield, L. R. ..... St. Paul
Cramer, H. E., Jr. ..... Rochester
Crombie, F. J. ..... No. St. Paul
Cronkite, A. E. ..... Rochester
Cronwell, B. J. ..... Austin
Crow, E. R. ..... Ah-Gwah-Ching
Crowley, D. F., Jr. ..... Rochester
Crowley, J. H. ..... St. Paul
Crump, J. W. ..... St. Paul
Culligan, J. M. ..... St. Paul
Culligan, L. C. ..... Minneapolis
Culmer, C. U. ..... Minneapolis
Culver, L. G. ..... St. Paul
Cumming, H. A. ..... Minneapolis
Cunningham, C. B. ..... Virginia
Curtis, R. A. ..... LeCenter
Cutts, George ..... Minneapolis

Dack, L. G. ..... St. Paul
Dady, E. E. ..... Minneapolis
Dahl, E. O. ..... Minneapolis
†Dahl, G. A. ..... Mankato
Dahl, J. A. ..... Minneapolis
Dahle, M. B. ..... Glenwood
Dahlin, D. C. ..... Rochester
Dahlin, I. T. ..... Aurora
Daignault, Oscar ..... Benson
Dale, L. N. ..... Crosby
Danford, K. A. ..... Mahnomen
Daniel, D. H. ..... Minneapolis
Daniels, B. T. ..... Rochester
Danielson, K. A. ..... Litchfield
Danielson, Lennox ..... Litchfield
Dargay, C. P. ..... Minneapolis
†Daugherty, E. B. ..... Marine-on-St. Croix
Daugherty, G. W. ..... Rochester
Daut, R. V. ..... Rochester
Davis, A. C. ..... Rochester
Davis, E. V. ..... St. Paul
Davis, G. D. ..... Rochester
Davis, I. G. ..... Rushford
Davis, J. C. ..... Minneapolis
Davis, L. T. ..... Wadena
Davis, L. F. ..... Wadena
Davis, T. C. ..... Wadena
Davis, R. D. ..... Waseca
‡Davis, R. M. ..... Indiana
Davis, T. L. ..... Wadena

Davis, W. I. ..... Mound
Day, Lois A. ..... Rochester
Dearing, W. H., Jr. ..... Rochester
DeBoer, Hermanus ..... Edgerton
Decker, C. H. ..... St. Paul
Dederick, G. F., Jr. ..... Rochester
Dedolph, Karl ..... St. Paul
†Dedolph, T. H. ..... Minneapolis
‡DeForest, R. E. ..... Rochester
DeLamater, E. D. ..... Rochester
Delmore, J. L., Jr. ..... Roseau
Delmore, J. L. ..... Roseau
Delmore, R. J. ..... Roseau
del Plaine, C. W. ..... Minneapolis
Demo, R. A. ..... Albert Lea
Denman, A. V. ..... Mankato
Dennis, Clarence ..... Minneapolis
Derauf, B. I. ..... St. Paul
Derifield, R. S. ..... Hibbing
Desjardins, A. U. ..... Rochester
Deterling, R. A., Jr. ..... New York
Deters, D. C. ..... St. Paul
Devereaux, T. J. ..... Wayzata
Devine, K. D. ..... Rochester
Devney, J. W. ..... Rochester
DeVoe, R. W. ..... Rochester
DeWeerd, J. H., Jr. ..... Rochester
Deweese, W. J. ..... Bemidji
Dewey, D. H. ..... Owatonna
Dickson, F. H., Jr. ..... Proctor
Dickson, T. H. ..... St. Paul
Diehl, H. S. ..... Minneapolis
Diessner, G. R. ..... Rochester
Diessner, H. D. ..... Minneapolis
Dille, D. E. ..... Litchfield
Dittrich, R. J. ..... Duluth
Dixon, C. F. ..... Rochester
Dockerty, M. B. ..... Rochester
Dodds, Wm. C. ..... Detroit Lakes
Doehring, P. C., Jr. ..... Vallejo, Calif.
Doherty, E. M. ..... New Prague
Dolder, F. C. ..... Eyota
Doman, V. W. ..... Lakefield
Domeier, L. H. ..... New Ulm
Doms, H. C. A. ..... Slayton
Donaldson, C. S. ..... Foley
Donoghue, F. E. ..... Brooklyn, N. Y.
Donohue, P. F. ..... St. Paul
Donovan, D. L. ..... Albert Lea
Doolittle, L. E. ..... Duluth
Dordal, J. ..... Sacred Heart
Dorge, R. I. ..... Minneapolis
Dornberger, G. R. ..... Rochester
Dornblaser, H. B. ..... Minneapolis
Dorsey, G. C. ..... Minneapolis
Douglas, J. M. ..... Rochester
Douglass, B. E. ..... Rochester
Dovre, C. M. ..... St. Paul
Dowidat, R. W. ..... Minneapolis
Doswell, W. J. ..... Kerkhoven
Doxey, G. L. ..... Minneapolis
Doyle, G. C. ..... Duluth
Doyle, L. O. ..... Minneapolis
Drake, C. B. ..... St. Paul
Drake, C. R. ..... Minneapolis
†Drake, F. A. ..... Lanesboro
Dredge, H. P. ..... Sandstone
Drexler, G. W. ..... Blue Earth
Drill, H. E. ..... Hopkins
Drips, Della G. ..... Rochester
Drumheller, J. J. ..... New York
Dry, T. J. ..... Rochester
Dubbe, F. H. ..... New Ulm
DuBois, J. F. ..... Sauk Centre
Duff, E. R. ..... Minneapolis
Duggan, A. D. ..... Rochester
Dukelow, D. A. ..... Minneapolis
†Dumas, A. G. ..... Minneapolis
Duncan, J. W. ..... Moorhead
Dungay, N. S. ..... Northfield
Dunlap, E. H. ..... Minneapolis
Dunn, G. R. ..... Minneapolis
Dunn, J. H. ..... Rochester
Dunn, J. N. ..... St. Paul
DuPont, I. A. ..... Excelsior
Duryea, W. M. ..... Minneapolis
Du Shane, J. W. ..... Rochester
†Dutton, C. E. ..... Minneapolis
Dvorak, B. A. ..... Minneapolis
Dwan, P. F. ..... Minneapolis
Dwinnell, L. A. ..... Fergus Falls
Dworsky, S. D. ..... Minneapolis
Dysterheft, A. F. ..... Gaylord

Earl, G. A. ..... St. Paul
Earl, J. R. ..... St. Paul
Earl, Robert ..... St. Paul
Earnest, Franklin, III ..... Rochester
Eaton, L. M. ..... Rochester
Eberley, T. S. ..... Benson
†Eberlin, E. A. ..... Glenwood
Ebert, R. V. ..... Minneapolis
Eckdale, J. E. ..... Marshall
Eckles, N. ..... Minneapolis
Eckman, P. F. ..... Duluth
Eckman, R. J. ..... Duluth
Eckstam, E. E. ..... Rochester
Edlund, Gustaf ..... St. Paul
Edwards, Jessie E. ..... Rochester
Edwards, J. W. ..... St. Paul
Edwards, L. G. ..... St. Paul
†Edwards, R. T. ..... Big Fork, Mont.
Edwards, T. J. ..... St. Paul
Eginton, C. T. ..... St. Paul
Ehrenberg, C. J. ..... Minneapolis
Ehrlich, S. P. ..... Minneapolis
Eich, Matthew ..... Minneapolis
Eiler, John ..... Park Rapids
Eisenman, Walter ..... Coleraine
Eisenstadt, D. H. ..... Minneapolis
Eisenstadt, W. S. ..... Minneapolis
Eitel, G. D. ..... Minneapolis
Ekblad, J. W. ..... Duluth
Ekstrand, L. M. ..... Wabasha
Elias, F. J. ..... Duluth
Elkins, E. C. ..... Rochester
Ellingson, A. R. ..... Detroit Lakes
Ellingson, E. A. ..... Rochester
Elliott, J. A., Jr. ..... Rochester
Elliott, R. B. ..... Oskaloosa, Iowa
Ellis, E. W. ..... Elgin
Ellis, F. Henry ..... New York
Ellison, D. E. ..... Minneapolis
Ellison, F. E. ..... Monticello
Elsey, E. M. ..... Glenwood
†Elsey, J. R. ..... Glenwood
Ely, O. S. ..... So. St. Paul
Emanuel, K. W. ..... Duluth
Emerson, E. C. ..... St. Paul
Emerson, E. E. ..... Osakis
Emmett, J. L. ..... Rochester
Endress, E. K. ..... St. Paul
Engberg, E. J. ..... Faribault
Engelhart, P. C. ..... Minneapolis
Englund, E. F. ..... Minneapolis
Engstrand, O. J. ..... Minneapolis
Engstrom, G. F. ..... Belgrade
Enroth, O. E. ..... St. Paul
Eppard, R. M. ..... Cloquet
Erb, H. R. ..... Rochester
Erich, J. B. ..... Rochester
Erickson, A. O. ..... Long Prairie
Erickson, C. O. ..... Minneapolis
Erickson, D. J. ..... Rochester
Erickson, Eskil ..... Halstad
Erickson, R. E. ..... Hector
Erickson, R. F. ..... Minneapolis
Ericson, R. M. ..... Minneapolis
Ericson, Swan ..... Le Sueur
Ernest, G. C. H. ..... So. St. Paul
Ersfeld, M. P. ..... St. Paul
Erskine, G. M. ..... Grand Rapids
Ertel, E. O. ..... Ellendale
†Eshelby, E. C. ..... St. Paul
Esser, John ..... Perham
Esser, O. J. ..... New Ulm
Estes, J. E. ..... Rochester
Estrem, C. O. ..... Fergus Falls
Estrem, R. D. ..... Fergus Falls
Estrem, R. L. ..... Fergus Falls
Estrem, T. A. ..... Hibbing
Eusterman, G. B. ..... Rochester
Eustermann, J. J. ..... Mankato
Evans, E. T. ..... Minneapolis
Evans, L. M. ..... Sauk Rapids
Evans, R. D. ..... Minneapolis
†Evarts, A. B. ..... Rochester
Evert, J. A. ..... St. Paul
Ewens, H. B. ..... Virginia

Faber, J. E. ..... Rochester
Faber, W. M. ..... Rochester
†Fahey, E. W. ..... St. Paul
Fahr, G. F. ..... Minneapolis
Fait, R. V. ..... Little Falls
Fansler, W. A. ..... Minneapolis
Farber, E. M. ..... Rochester
Farkas, J. V. ..... St. Paul
†Farrish, R. C. ..... Sherburn
†Farsht, I. J. ..... Los Angeles, Calif.
Faulconer, Albert, Jr. ..... Rochester
Fawcett, A. M. ..... Renville
Fawcett, K. R. ..... Duluth
Fawcett, R. M. ..... Rochester
Fearing, J. E. ..... Pequot Lakes
Feeney, J. M. ..... Minneapolis
Feinstein, J. Y. ..... Minneapolis
Feldman, F. M. ..... Rochester
Felion, A. J. ..... Two Harbors, Minn.
Fellows, M. F. ..... Duluth
Fenger, E. P. K. ..... Oak Terrace
Ferguson, J. C. ..... St. Paul
Ferguson, W. C. ..... Walnut Grove
Ferguson, W. J. ..... Rochester
Ferrell, C. R. ..... Grand Rapids
Ferris, D. O. ..... Rochester
‡Ferris, H. A., Jr. ..... Rochester
Fensenmaier, O. B. ..... New Ulm
Fesler, H. H. ..... St. Paul
*Fetterly, Warren ..... Minneapolis
Figi, F. A. ..... Rochester
Fine, B. A. ..... Crosby
Fink, D. L. ..... St. Paul
Fink, L. W. ..... Minneapolis
Fink, W. H. ..... Minneapolis
Fisch, H. M. ..... Austin
Fischer, M. McC. ..... Duluth
Fisher, Dan W. ..... St. Paul
Fisher, Isadore ..... St. Paul
Fisher, J. M. ..... Willmar
Fisher, R. G. ..... Rochester
Fisher, R. L. ..... Pomona, Calif.
Fisketti, Henry ..... Duluth
†Fitzgerald, D. F. ..... Minneapolis
Fitzgerald, E. T. ..... Morris
Fitzgibbons, R. J. ..... Nebr.
Fitzsimons, W. E. ..... Brainerd
Fjeldstad, C. A. ..... Minneapolis
Flanagan, H. F. ..... St. Paul
Flanagan, L. G. ..... Austin
Flannery, Hubert F. ..... St. Paul
Flashman, F. L. ..... Rochester
Flautt, J. R., Jr. ..... Rochester
Fleeson, W. H. ..... Minneapolis
Fleming, A. S. ..... Minneapolis
Fleming, D. S. ..... Minneapolis
Fleming, T. N. ..... St. Cloud
Flesche, B. A. ..... Lake City
Flink, E. B. ..... St. Paul
Flinn, T. E. ..... Redwood Falls
Flom, M. G. ..... Zumbrota
Flynn, B. F. ..... Hibbing
Fogarty, C. W., Jr. ..... St. Paul
Fogarty, C. W. ..... St. Paul
Fogelberg, E. J. ..... St. Paul
Foker, L. W. ..... Minneapolis
Foley, F. E. B. ..... St. Paul
Folken, F. G. ..... Albert Lea
Folsom, L. B. ..... Minneapolis
Ford, B. C. ..... Marshall
Ford, John L. ..... Rochester
Ford, W. H. ..... Minneapolis
Forney, R. A. ..... Rochester
Forsythe, J. R. ..... St. Paul
Fortier, G. M. A. ..... Little Falls
Foss, E. L. ..... Rochester
Foster, Orley W. ..... Minneapolis
Foster, W. K. ..... Minneapolis
Fowler, L. H. ..... Minneapolis
Fox, James R. ..... Minneapolis
Franchere, F. W. ..... Lake Crystal
Francis, D. W. ..... Morristown
Frane, D. B. ..... Minneapolis
Frank, J. E. ..... Marshall
Frank, W. L. ..... Jacksonville, Illinois
Fraser, Frank A. ..... Thief River Falls
Frear, Rosemary R. ..... Minneapolis
Fredericks, G. M. ..... Minneapolis
Frederickson, Alice C. ..... Willmar
Frederickson, G. U. Y. ..... Willmar
Fredlund, M. L. ..... Minneapolis
Fredricks, M. G. ..... Duluth
Freedland, Morris ..... Fosston
Freeman, C. D. ..... St. Paul
Freeman, G. H. ..... St. Peter
Freidman, L. L. ..... St. Paul
Freligh, W. P. ..... Albert Lea
French, L. A. ..... Minneapolis
Fricke, R. E. ..... Rochester
Fricke, R. W. ..... Rochester
Fried, L. A. ..... Minneapolis
Friedell, Aaron ..... Minneapolis
Friedell, George ..... Ivanhoe
Friefeld, Saul ..... Wadena
Friesleben, William ..... Sauk Rapids
Frisch, F. P. ..... Willmar
Fritsche, Albert ..... New Ulm
Fritsche, C. J. ..... New Ulm
Fritsche, T. R. ..... New Ulm
Fritz, W. L. ..... St. Paul
Froats, C. W. ..... St. Paul
Frost, E. H. ..... Willmar
Frost, J. B. ..... Minneapolis
Frost, R. H. ..... St. Paul
Frykman, H. M. ..... Minneapolis
Fugina, G. R. ..... Mankato
Fuller, Alice H. ..... Minneapolis
Funk, V. K. ..... Oak Terrace

*Gaarde, F. W., Sr. ..... Rochester
Gaarde, F. W., Jr. ..... Rochester
Gaida, J. B. ..... St. Cloud
Gaines, E. C. ..... Buffalo Lake
Gallagher, B. J. ..... Waseca
Galligan, Margaret M. D. ..... Minneapolis
Galloway, J. B. ..... Minneapolis
†Gambill, C. M. ..... Rochester
Gambill, E. E. ..... Rochester
*Gamble, J. W. ..... Albert Lea
*Gamble, P. M. ..... Albert Lea
Gammell, J. H. ..... Minneapolis
Garbrecht, A. W. ..... St. Paul
Gardiner, D. G. ..... St. Paul
Gardner, V. H. ..... Fairmont
Gardner, W. P. ..... St. Paul

Garlock, A. V. ..... Bemidji
Garlock, D. H. ..... Bemidji
Garrow, D. M. ..... St. Paul
Garten, J. L. ..... Minneapolis
Garthe, J. J. ..... Vallejo, Calif.
Gastineau, C. F. ..... Rochester
Gates, E. M. ..... Rochester
Gay, J. R. ..... Rochester
Geer, E. K. ..... St. Paul
Gehlen, J. N. ..... St. Paul
Geist, G. A. ..... St. Paul
*Gendron, J. F. ..... Grand Rapids
Geraci, J. E. ..... Rochester
Gerber, M. P. ..... Brainerd
Gericke, J. T., Jr. ..... Glenwood
Ghent, C. H. ..... St. Paul
Ghormley, R. K. ..... Rochester
Ghostley, Mary C. ..... Puposky
Gibbons, F. C. ..... Comfrey
Gibbs, E. C. ..... St. Paul
Gibbs, R. W. ..... Minneapolis
Gibson, D. P. ..... St. Paul
Gibson, R. H. ..... Rochester
Giebenhain, J. N. ..... Minneapolis
Giere, J. C. ..... Minneapolis
Giere, R. W. ..... Minneapolis
Giere, S. W. ..... Willmar
Giesen, A. F. ..... Starbuck
†Giessler, P. W. ..... Minneapolis
Giffin, H. Z. ..... Rochester
Giffin, Mary E. ..... Rochester
Gilbert, M. G. ..... Minneapolis
†Gilfillan, J. S. ..... St. Paul
Gilkey, S. E. ..... St. Paul
Gillespie, D. R. ..... St. Paul
Gillespie, M. G. ..... Duluth
Gilman, L. C. ..... Willmar
†Gilmore, Rowland. ..... Bemidji
Gingold, B. A. ..... Minneapolis
*†Ginsberg, Wm. ..... St. Paul
Giroux, A. A. ..... No. Mankato
Girvin, R. B. ..... Minneapolis
Gjerde, W. P. ..... St. Paul
Glabe, R. A. ..... Plainview
Gleason, W. A. ..... St. Paul
Glenn, W. V. ..... Rochester
Goblirsch, A. P. ..... Sleepy Eye
Goehrs, G. H. ..... St. Cloud
Goehrs, H. W. ..... St. Cloud
Gagela, L. J. ..... Rochester
Goldberg, I. M. ..... Minneapolis
‡Golden, P. B. ..... Rochester
Goldish, D. R. ..... Duluth
Goldman, T. I. ..... Minneapolis
Goldner, M. Z. ..... Minneapolis
Goldsmith, J. W. ..... St. Paul
†Goltz, E. V. ..... St. Paul
Gooch, J. O. ..... Rochester
Good, C. A., Jr. ..... Rochester
Good, H. D. ..... Minneapolis
Goodman, C. E. ..... Virginia
Gordon, P. E. ..... Minneapolis
Goss, H. C. ..... Glencoe
Goss, Martha D. ..... Glencoe
Gowan, L. R. ..... Duluth
Graham, A. W. ..... Chisholm
Graham, F. M. ..... Rochester
Graham, R. J. ..... Rochester
Grahek, J. P. ..... Ely
Gramse, A. E. ..... Rochester
Grant, H. W. ..... St. Paul
Grant, J. C. ..... Sauk Center
Gratzek, F. R. E. ..... Minneapolis
Gratzek, Thomas ..... St. Paul
Grau, R. K. ..... St. Paul
Grave, Floyd ..... Minneapolis
Graves, R. B. ..... Red Wing
Graves, W. N. ..... Duluth
Gray, C. P. ..... Rochester
Gray, F. D. ..... Marshall
Gray, H. K. ..... Rochester
Gray, R. C. ..... Minneapolis
*Green, R. G. ..... Minneapolis
Greene, L. F. ..... Rochester
Greenfield, W. T. ..... Delano
Gridley, J. W. ..... Glencoe
Griffin, J. G. ..... Rochester
Griffin, R. P. ..... Benson
Griffith, E. R. ..... Rochester
Grimes, B. P. ..... St. Peter
Grimes, Marian ..... Minneapolis
Grindlay, J. H. ..... Rochester
Grinley, A. V. ..... Grand Rapids
Grise, W. B. ..... Austin
Grogan, J. M. ..... Ceylon
Grogan, J. S. ..... Wadena
Gronvall, P. R. ..... Minneapolis
Groom, Dale ..... Rochester
Groschupf, T. P. ..... Bemidji
Grose, P. N. ..... Clarissa
Groskloss, H. H. ..... Minneapolis
Gross, J. B. ..... Rochester
Grotting, J. K. ..... Rochester
Grugenhagen, A. P. ..... St. Paul
Grundset, O. J. ..... Montrose
Guernsey, D. E. ..... Rochester
Guilbert, G. D. ..... Wood, Wis.
Guilfoile, P. J. ..... Delano
Gully, R. J. ..... Cambridge
Gunlaugson, F. D. ..... Fergus Falls
Gushurst, E. G. ..... Minneapolis
Gustason, H. T. ..... Minneapolis

Habein, H. C. ..... Rochester
Haberer, Helen R. ..... Minneapolis
Haberle, C. A. ..... Thief River Falls
Haberman, Emil ..... Osakis
Haes, J. E. ..... Mankato
Hagedorn, A. B. ..... Rochester
Hagen, O. J. ..... Moorhead
Hagen, P. S. ..... Minneapolis
Hagen, W. S. ..... Minneapolis
†Haggard, G. D. ..... Minneapolis
Haight, G. G. ..... Audubon
†Haines, J. H. ..... Stillwater
Haines, R. D. ..... Rochester
Haines, S. F. ..... Rochester
Halenbeck, P. L. ..... St. Cloud
*Hall, A. R. ..... St. Paul
Hall, B. E. ..... Rochester
Hall, H B. ..... Minneapolis
Hall, H. H. ..... St. Paul
Hall, W. E. ..... Maple Lake
Hall, W. H. ..... Minneapolis
Halladay, G. J. ..... Minneapolis
Hallberg, C. A. ..... Minneapolis
Hallberg, O. E. ..... Rochester
Hallenbeck, D. F. ..... Rochester
Hallenbeck, G. A. ..... Rochester
Hallin, R. P. ..... Worthington
Halloran, W. H. ..... Jackson
Halme, W. B. ..... Cloquet
Halpern, D. J. ..... Brewster
Halpin, J. E. ..... Rush City
Hamilton, C. F. ..... Rochester
*Hamlin, G. B. ..... Minneapolis
Hamlon, J. S. ..... St. Charles
Hamm, R. S. ..... Rochester
*Hammermeister, T. F. ..... New Ulm
†Hammerstad, L. M. ..... Minneapolis
Hammes, E. M. ..... St. Paul
Hammes, E. M., Jr. ..... St. Paul
Hammond, A. J. H. ..... Minneapolis
Hammond, J. F. ..... St. Paul
Haney, C. L. ..... Duluth
Hankerson, R. G. ..... Minnesota Lake
Hanlon, D. G. ..... Rochester
Hanlon, G. H. ..... Rochester
Hannah, H. B. ..... Minneapolis
Hanover, R. D. ..... Littlefork
Hansbro, G. L. ..... Rochester
Hansen, C. O. ..... Minneapolis
Hansen, E. W. ..... Minneapolis
Hansen, Olga S. ..... Minneapolis
Hansen, R. E. ..... Hibbing
Hansen, T. M. ..... Albert Lea
Hanson, A. M. ..... Faribault
Hanson, E. O. ..... Cloquet
Hanson, E. C. ..... New York Mills
Hanson, H. J. ..... Minneapolis
Hanson, H. B. ..... St. Paul
Hanson, H. V. ..... Minneapolis
Hanson, J. W. ..... Northfield
Hanson, Lewis ..... Frost
Hanson, M. B. ..... Minneapolis
Hanson, N. O. ..... Rochester
Hanson, W. A. H. ..... Minneapolis
Happe, L. J. ..... Minneapolis
Hargraves, M. M. ..... Rochester
Harmon, G. E. ..... St. Paul
Harriman, Leonard .... Howard Lake
*Harrington, C. D. ..... Minneapolis
Harrington, S. W. ..... Rochester
Harris, C. N. ..... Hibbing
Harris, E. S. ..... St. Paul
Harris, L. E. ..... Rochester
Harrison, P. W. ..... Worthington
Hart, G. M. ..... Rochester
Hart, V. L. ..... Minneapolis
Hart. W. E. ..... Monticello
Hartfiel, H. A. ..... Montevideo
Hartfiel, W. F. ..... St. Paul
Hartig, Hermina A. ..... Minneapolis
Hartig, Marjorie ..... St. Paul
Hartley, E. C. ..... St. Paul
Hartman, H. R. ..... Rochester
Hartnagel, G. F. ..... Red Wing
Hartung, E. H. ..... Claremont
†Hartzell, T. B. ..... Minneapolis
Harvard, B. M., Jr. ..... Rochester
Harvey, George, Jr. ..... Rochester
Haskell, A. D. ..... Alexandria
Haserick, J. R. ..... Minneapolis
Hass, F. M. ..... Jordan
Hassett, M. F. ..... St. Paul
Hassett, R. G. ..... Mankato
Hasskarl, W. F. ..... Rochester
Hastings, D. R. ..... Minneapolis
Hastings, D. W. ..... Minneapolis
Hatch, W. E. ..... Duluth
Hatcher, A. C. ..... Rochester
Hathaway, S. J. ... Tacoma, Wash.
Hauge, E. T. ..... Minneapolis
Hauge, M. I. ..... Clarkfield
Haugen, G. W. ..... Minneapolis
Haugen, J. A. ..... Minneapolis
Hauser, V. P. ..... St. Paul
Havel, H. W. ..... Jordan
Haven, W. K. ..... Minneapolis
Havens, F. Z. ..... Rochester
Havens, J. G. W. ..... Austin
Hawkinson, R. P. ..... Minneapolis
Hay, Sam H. ..... Rochester
Hayes, A. F. ..... St. Paul
Hayes, J. M. ..... Minneapolis
Hayes, M. F. ..... Nashwauk
Hayles, A. B. ..... Rochester
Haynes, A. L. ..... Rochester
Hays, A. T. ..... Minneapolis
Head, D. P. ..... Minneapolis
Head, G. D. ..... Minneapolis
Headley, N. E. ... Los Angeles, Calif.
Healy, R. T. ..... Pierz
Hebbel, Robert ..... Minneapolis
Hebeisen, M. B. ..... Chaska
Heck, F. J. ..... Rochester
Heck, W. W. ..... St. Paul
Hedback, A. E. ..... Minneapolis
Hedberg, G. A. ..... Nopeming
Hedemark, H. H. ..... Ortonville
Hedemark, T. A. ..... Ortonville
Hedenstrom, F. G. ..... St. Paul
Hedenstrom, L. H. ..... Cambridge
Hedin, R. F. ..... Red Wing
Heersema, P. H. ..... Rochester
Hegge, O. H. ..... Austin
Hegge, R. S. ..... Austin
Heiam, W. C. ..... Cook
Heiberg, E. A. ..... Fergus Falls
Heiberg, O. M. ..... Worthington
Heilman, D. M. H. ..... Rochester
Heilman, F. R. ..... Rochester
Heim, R. R. ..... Minneapolis
Heimark, J. J. ..... Fairmont
Heinrich, W. A. ..... Rochester
Heinz, I. B. ..... Wabasso
Heinz, L. H. ..... Wabasso
Heise, Herbert ..... Winona
Heise, Paul ..... Winona
Heise, P. R. ..... Winona
†Heise, W. F. C. ..... Winona
Heise, W. V. ..... Winona
Helferty, J. K. ..... Minneapolis
†Helland, G. M. ..... Spring Grove
Helland, J. W. ..... Spring Grove
Helmholz, H. F. ..... Rochester
Helseth, H. K. ..... Fergus Falls
Hempstead, B. E. ..... Rochester
†Hemstead, Werner. ..... Fergus Falls
Hench, P. S. ..... Rochester
Henderson, A. J. G. ..... St. Paul
‡Henderson, E. D. ..... Rochester
Henderson, J. W. ..... Rochester
Henderson, L. L. ..... Rochester
Henderson, M. S. ..... Rochester
Hendricks, E. J. ..... St. Paul
†Hendrickson, J. F. ..... Minneapolis
Hendrickson, R. R. ..... Lake Park
Henegar, G. C. ..... Rochester
Hengstler, W. H. ..... St. Paul
Henkel, H. B. ..... Rochester
Henney, W. H. ..... McIntosh
Henrikson, E. C. ..... Minneapolis
Henry, C. J. ..... Milaca
†Henry, C. E. ..... Kirksville, Mo.
Henry, M. O. ..... Minneapolis
Henry, M. R. ..... St. Peter
Hensel, C. N. ..... St. Paul
Henslin, A. E. ..... Le Roy
Henslin, M. E. ..... Cresco, Iowa
Herbert, W. L. ..... Minneapolis
Herbst, R. F. ..... Wykoff
Herman, S. M. ..... St. Paul
Hermann, H. W. ..... Caledonia
Hermanson, P. E. ..... Hendricks
Heron, R. C. ..... St. Paul
Herrell, W. E. ..... Rochester
Herrmann, E. T. ..... St. Paul
Hertel, G. E. ..... Austin
Hertz. M. J. ..... St. Paul
Hertzog, A. J. ..... Minneapolis
Hesdorffer, M. B. ..... Minneapolis
Hetherington, J. A. ..... Rochester
Hewitt, Edith S. ..... Rochester
†Hewitt, R. M. ..... Rochester
†Heyerdale, O. C. ..... Rochester
Higgins, J. H. ..... Minneapolis
Higgs, W. W. ..... Park Rapids
Hightower, N. C., Jr. ..... Rochester
Hildebrand, C. H., Jr. ..... Rochester
Hilding, A. C. ..... Duluth
Hilger, A. W. ..... St. Paul
†Hilger, D. D. ..... St. Paul
Hilger, I. A. ..... St. Paul
Hilger, L. A. ..... St. Paul

Hilger, L. D. ..... St. Paul
Hilker, M. D. ..... St. Paul
Hill, E. M. ..... Minneapolis
Hill, F. E. ..... Duluth
Hill, J. R. ..... Rochester
Hillis, S. J. ..... Minneapolis
Hinckley, R. G. ..... Minneapolis
Hines, E. A., Jr. ..... Rochester
Hiniker, L. P. ..... St. Paul
Hiniker, P. J. ..... Le Sueur
Hinshaw, H. C. ..... Rochester
Hinz, W. E. ..... Bird Island
Hirschboeck, F. J. ..... Duluth
Hirshfield, F. R. ..... Minneapolis
Hitchcock, C. R. ..... Minneapolis
Hitchings, W. S. ..... Lakefield
†Hoaglund, A. W., Santa Monica, Calif.
Hochfilzer, J. J. ..... St. Paul
Hodapp, R. J. ..... Willmar
Hodge, S. V. ..... Minneapolis
Hodgson, C. H. ..... Rochester
Hodgson, J. R. ..... Rochester
Hodgson, J. E. ..... St. Paul
Hoeper, F. G. ..... Mankato
Hoff, Alfred ..... St. Paul
Hoff, H. O. ..... Duluth
†Hoffbauer, F. W. ..... New York
Hoffert, H. E. ..... Minneapolis
Hoffman, R. A. ..... Minneapolis
Hoffman, W. L. ..... Minneapolis
Hogben, C. A. M. ..... Rochester
Hoidale, A. D. ..... Tracy
Holcomb, J. T. ..... Marine-on-St. Croix
Holcomb, O. W. ..... St. Paul
Hollands, Wm. H. ..... Fisher
Hollenhurst, R. W. ..... Rochester
Hollinshead, W. H. ..... St. Paul
Holm, H. H. ..... Glencoe
†Holm, P. F. ..... Wells
Holman, Colin B. ..... Rochester
Holmberg, C. J. ..... Minneapolis
Holmberg, L. ..... Canby
Holmen, R. W. ..... St. Paul
Holmes, A. E. ..... Rush City
Holmstrom, C. H. ..... Warren
Holt, G. W. ..... Hastings
Holt, J. F. ..... St. Paul
Holt, R. F. ..... Oklahoma
Holtan, Theodore ..... Waterville
Holzapfel, F. C. ..... Minneapolis
Hoon, J. R. ..... Rochester
Hopkins, G. W. ..... St. Paul
Hoppes, E. E. ..... Rochester
Horning, E. D. ..... Rochester
Horns, R. C. ..... Minneapolis
Horton, B. T. ..... Rochester
Hottinger, R. C. ..... Janesville
Houkom, S. S. ..... Duluth
†House, Z. E. ..... California
Houston, D. M. ..... Park Rapids
Hovde, Rolf ..... Winthrop
Hovland, M. L. ..... Minneapolis
Howard, E. G. ..... Mapleton
Howard, M. I. ..... Mankato
Howard, M. A. ..... St. Paul
Howard, S. E. ..... Minneapolis
Howard, W. S. ..... St. Paul
Howe, N. W. ..... St. Paul
Howell, L. P. ..... Rochester
Hoyer, L. J. ..... Windom
Hubbard, O. E. ..... Brainerd
Hubin, E. G. ..... Sandstone
Hudec, E. R. ..... Echo
Hudson, G. E. ..... Minneapolis
Huenekens, E. J. ..... Minneapolis
Huffington, H. L. ..... Mankato
Hullsiek, H. E. ..... St. Paul
Hullsiek, R. B. ..... St. Paul
Hultgen, W. J. ..... St. Paul
Hultkrans, J. C. ..... Minneapolis
Hultkrans, R. E. ..... Minneapolis
Humphrey, E. W. ..... Moorhead
Humphrey, W. R. ..... Stillwater
Hunt, A. B. ..... Rochester
Hunt, R. C. ..... Fairmont
Hunt, R. S. ..... Fairmont
Hunt, V. W. ..... Rochester
Hunte, A. F. ..... Alhambra, Calif.
†Hurd, Annah ..... Minneapolis
‡Hurley, J. P. ..... Massachusetts
Hurwitz, M. M. ..... St. Paul
‡Hutchinson, C. J. ..... Minneapolis
Hutchinson, D. W. ..... Oak Terrace
Hutchinson, Henry ..... Moose Lake
Huxley, F. R. ..... Faribault
Hymes, Charles ..... Minneapolis
Hynes, J. E. ..... Minneapolis

†Ide, A. W. ..... St. Paul
Idstrom, L. G. ..... Wayzata
Ikeda, Kano ..... St. Paul
Ingebrigtson, E. K. G. ..... Moorhead
Ingerson, C. A. ..... St. Paul
Irmisch, G. W. ..... New Jersey
Irvine, H. G. ..... Minneapolis

Iverson, R. M. ..... Minneapolis
Ivins, J. C. ..... Rochester

Jackman, R. J. ..... Rochester
Jackson, A. E. ..... Rochester
Jackson, H. S. ..... Rochester
Jacobs, D. L. ..... Willmar
Jacobs, G. C. ..... Fergus Falls
Jacobs, J. C. ..... Willmar
Jacobson, Clarence ..... Chisholm
Jacobson, C. W. ..... Breckenridge
Jacobson, F. C. ..... Duluth
James, E. M. ..... Minneapolis
Jamieson, E. F. ..... Brainerd
Janecky, A. G. ..... Warroad
Janes, J. M. ..... Rochester
Janssen, M. E. ..... St. Paul
Jarrett, Paul S. ..... Rochester
‡Jennings, D. T. ..... Rochester
Jensen, A. M. ..... Brownton
Jensen, G. L. ..... Rochester
Jensen, H. C. ..... Minneapolis
†Jensen, M. J. ..... Minneapolis
Jensen, N. K. ..... Minneapolis
Jensen, R. A. ..... Minneapolis
Jensen, T. J. ..... Duluth
Jesion, J. W. ..... St. Paul
Jerome, B. ..... Minneapolis
Jeronimus, H. J. ..... Duluth
Jessico, C. M. ..... Duluth
Joffe, H. H. ..... Duluth
Johanson, W. G. ..... St. Paul
Johns, Sylvia ..... Rochester
Johnson, A. B. ..... Minneapolis
Johnson, A. E. ..... Minneapolis
Johnson, A. E. ..... Red Wing
Johnson, A. F. ..... Isanti
Johnson, A. M. ..... St. Paul
Johnson, B. H. ..... Rochester
‡Johnson, C. C. ..... Georgia
Johnson, C. E. ..... Iowa
Johnson, C. E. ..... St. Paul
Johnson, C. P. ..... Tyler
Johnson, D. L. ..... Little Falls
Johnson, E. A. ..... Thief River Falls
Johnson, F. W. ..... Bemidji
Johnson, F. W., Jr. ..... Rochester
Johnson, F. W. ..... Minneapolis
Johnson, Evelyn V. ..... Minneapolis
Johnson, Hans ..... Kerkhoven
Johnson, H. A. ..... Minneapolis
Johnson, H. A. ..... Rochester
Johnson, H. C. ..... North Mankato
Johnson, H. C. ..... Thief River Falls
*Johnson, H. E. ..... Bird Island
Johnson, I. A. ..... St. Paul
Johnson, I. A. ..... Minneapolis
†Johnson, J. W. ..... St. Louis Park
Johnson, Julius ..... Minneapolis
Johnson, K. E. ..... Duluth
Johnson, M. A. ..... Storden
Johnson, M. A., III ..... Rochester
Johnson, M. R. ..... Minneapolis
†Johnson, N. A. ..Santa Monica, Calif.
Johnson, N. P. ..... Minneapolis
Johnson, N. T. ..... Minneapolis
Johnson, O. H. ..... Redwood Falls
Johnson, Olga H. ..... Moorhead
Johnson, R. B. ..... Lanesboro
Johnson, R. G. ..... Minneapolis
Johnson, R. G. ..... Stillwater
Johnson, Reuben A. ..... Minneapolis
Johnson, R. E. ..... Crookston
Johnson, R. E. ..... Minneapolis
Johnson, R. M. ..... Slayton
Johnson, V. M. ..... Dawson
Johnson, W. E. ..... Morgan
Johnson, Y. T. ..... Minneapolis
Johnsrud, L. W. ..... Chisholm
Johnston, L. F. ..... Winona
Jolin, F. M. ..... Bovey
Jondahl, W. H. ..... Rochester
†Jones, A. W. ..... Red Wing
Jones, E. M. ..... St. Paul
Jones, H. W., Jr. ..... Minneapolis
Jones, J. R. ..... Rochester
Jones, O. H. ..... Mankato
Jones, R. N. ..... St. Cloud
Jones, W. R. ..... Minneapolis
†Jordan, Kathleen ..... Granite Falls
Jordan, L. S. ..... Granite Falls
Josewich, Alexander ..... Minneapolis
Josewski, R. J. ..... Stillwater
Joyce, G. L. ..... Rochester
Judd, E. S., Jr. ..... Rochester
Judd, W. H. ..... Washington, D. C.
Juergens, H. M. ..... Belle Plaine
Juergens, M. F. ..... Belle Plaine
Juers, E. H. ..... Red Wing
Juliar, R. O. ..... St. Clair
Jurdy, M. J. ..... Minneapolis
Just, Herman J. ..... Hastings

Kabler, P. W. ..... Minneapolis
Kabrick, O. A. ..... Jackson

Kadish, A. H. ..... California
Kahiher, Howard ..... Pelican Rapids
Kalin, O. T. ..... Minneapolis
Kallestad, L. L. ..... Brownton
Kamman, G. R. ..... St. Paul
Kamp, B. A. ..... Albert Lea
Kaplan, D. H. ..... St. Paul
Kaplan, J. J. ..... Minneapolis
Kapsner, A. T. ..... Princeton
Karleen, B. N. ..... Jackson
Karleen, C. I. ..... Minneapolis
Karlstrom, A. E. ..... Minneapolis
Karn, B. R. ..... Ortonville
Karn, J. F. ..... Ortonville
Karon, I. M. ..... St. Paul
Kasper, E. M. ..... St. Paul
Kath, R. H. ..... Wood Lake
Katz, L. J. ..... St. Paul
Katzovitz, Hyman ..... St. Paul
Kaufman, E. J. ..... Appleton
Kaufman, H. J. ..... Minneapolis
Kaufman, W. B. ..... Mankato
Kaufman, W. C. ..... Appleton
Kearney, R. W. ..... Mankato
Keating, F. R., Jr. ..... Rochester
Keating, J. U. ..... Rochester
Keefe, R. E. ..... St. Paul
Keeley, J. K. ..... Rochester
Keffer, W. H. ..... Rochester
Keith, H. M. ..... Rochester
Keith, N. M. ..... Rochester
Keithahn, E. E. ..... Sleepy Eye
Kelby, G. M. ..... Minneapolis
Kelley, K. J. ..... Big Fork
Kelly, A. C. ..... Duluth
Kelly, J. F. ..... Cold Springs
Kelly, J. P. ..... Minneapolis
Kelly, J. V. ..... St. Paul
*Kelly, P. H. ..... St. Paul
Kelsey, C. M. ..... St. Paul
Kelsey, M. P. ..... Rochester
Kemp, A. F. ..... Mankato
Kemp, M. W. ..... No. Madison, Ill.
Kemper, C. M. ..... Rochester
Kenefick, E. V. ..... St. Paul
Kennedy, C. C. ..... Minneapolis
Kennedy, G. L. ..... Faribault
†Kennedy, J. F. ..... Minneapolis
Kennedy, R. L. J. ..... Rochester
Kennedy, T. J. ..... Rochester
Kennedy, W. A. ..... St. Paul
Kenyon, T. J. ..... St. Paul
*Kepler, E. J. ..... Rochester
Kerkhof, A. C. ..... Minneapolis
Kernohan, J. W. ..... Rochester
Kertesz, G. ..... Minneapolis
Kesting, Herman ..... St. Paul
Kettlewell, R. B. ..... Sauk Centre
Keyes, T. D. ..... Winona
*Kierland, P. E. ..... Alexandria
Kierland, R. R. ..... Rochester
†Kilbride, J. S. ..... Worthington
Kimmel, G. C., Jr. ..... Red Wing
†King, E. A. ..... Minneapolis
King, F. W. ..... Oak Terrace
King, G. L. ..... St. Paul
King, N. B. ..... Rochester
Kinsella, T. J. ..... Minneapolis
Kinsport, E. B. ..International Falls
Kirby, J. L. ..... Rochester
Kirk, G. P. ..... East Grand Forks
Kirklin, B. R. ..... Rochester
Kirklin, J. W. ..... Rochester
Kirkpatrick, N. R. ..... Rochester
Kistler, A. J. ..... Minneapolis
†*Kistler, C. M. ..... Minneapolis
Klefstad, L. H. ..... Greenbush
Kleifgen, G. V. H. ..... St. Paul
Klein, Harry ..... Duluth
Klein, H. N. ..... St. Paul
Klein, J. C. ..... Shakopee
Klein, Wm. A. ..... Duluth
Klima, W. W. ..... Stewart
Klontz, C. E., Jr. ..... Rochester
Knapp, F. N. ..... Duluth
Knapp, M. E. ..... Minneapolis
†*Knauff, M. K. ..... St. Paul
Knight, E. G. ..... Swanville
Knight, R. R. ..... Minneapolis
Knight, R. T. ..... Minneapolis
‡Knisely, R. M. ..... Rochester
Knoll, W. V. ..... Duluth
Knutson, G. A. ..... Hallock
Knutson, G. E. ..... St. Paul
Knutson, J. R. B. ..... Rochester
Knutson, L. A. ..... Spring Grove
Koelsche, G. A. ..... Rochester
Koenigsberger, Charles ..... Mankato
Koepcke, G. M. ..... Minneapolis
Kohlbry, C. O. ..... Duluth
Kohler, D. W. ..... St. Joseph
Kolars, J. J. ..... Faribault
Koller, H. M. ..... Minneapolis
Koller, L. R. ..... Minneapolis
Koop, S. H. ..... Richmond

Korchik, J. P. ..... Minneapolis
Korda, H. A. ..... Pelican Rapids
Kortsch, F. P. ..... Prior Lake
Koskela, A. L. ..... Deer River
Koskela, L. D. ..... Deer River
Kostick, W. R. ..... Fertile
Kotchevar, F. R. ..... Eveleth
Kottke, F. J. ..... Minneapolis
Koucky, R. W. ..... Minneapolis
Kraemer, G. N. ..... Canby
Krause, C. W. ..... Fairmont
Kreilkamp, B. L. ..... Rochester
Kremen, A. J. ..... Minneapolis
Kreman, I. C. ..... Duluth
Kreuzer, T. C. ..... Marshall
Krieser, A. E. ..... Ah-gwah-ching
Krueger, V. R. ..... Nopeming
Kruzick, S. J. ..... Sleepy Eye
Krusen, F. H. ..... Rochester
Kucera, F. J. ..... Hopkins
Kucera, S. T. ..... Lonsdale
Kucera, W. J. ..... Minneapolis
Kugler, A. A. ..... St. Paul
Kuhlman, L. B. ..... Melrose
Kurtin, H. J. ..... Blooming Prairie
Kurzweg, F. T. ..... Louisiana
Kuske, A. W. ..... St. Paul
Kusske, A. L. ..... New Ulm
Kusske, B. W. ..... Caledonia
Kvale, W. F. ..... Rochester
Kvitrud, Gilbert ..... St. Paul
LaBree, R. H. ..... Duluth
Lagaard, S. M. ..... Minneapolis
Laikola, L. A. ..... Adrian
Laird, A. T. ..... Duluth
Lajoie, J. M. ..... Minneapolis
Lake, C. F. ..... Rochester
Lamont, C. S. ..... Rochester
Lampert, E. G. ..... Rochester
Landry, R. M. ..... Rochester
Long, C. M. ..... Rochester
Lang, L. A. ..... Minneapolis
Langhoff, A. H. ..... St. Peter
Lannin, B. G. ..... St. Paul
Lannin, J. C. ..... Mabel
Lapierre, A. P. ..... Minneapolis
Lapierre, J. T. ..... Minneapolis
Larrabee, W. F., Jr. ..... Rochester
Larsen, C. L. ..... St. Paul
Larsen, F. W. ..... Minneapolis
Larson, Arnold ..... Detroit Lakes
Larson, C. M. ..... Minneapolis
Larson, E. A. ..... Minneapolis
Larson, Eva-Jane ..... St. Paul
Larson, J. T. ..... South St. Paul
Larson, K. R. ..... St. Paul
Larson, L. M. ..... Minneapolis
Larson, Leonard M. ..... Oak Terrace
Larson, Leroy ..... Bagley
Larson, M. H. ..... Nicollet
Larson, P. G. ..... Cleveland, Ohio
Larson, P. N. ..... Minneapolis
Larson, R. H. ..... Anoka
Laughlin, J. T. ..... Grey Eagle
La Vake, R. T. ..... Minneapolis
Law, S. G. ..... Minneapolis
Lax, M. H. ..... St. Paul
Laymon, C. W. ..... Minneapolis
Leahy, Bartholomew ..... St. Paul
Leary, W. V. ..... Rochester
Leavenworth, R. O. ..... St. Paul
†Leavitt, H. H. ..... Minneapolis
Leavitt, M. D. ..... Rochester
LeBlanc, L. J. ..... Rochester
Lebowske, J. A. ..... Minneapolis
Leck, P. C. ..... Austin
Leden, U. M. ..... Rochester
Leddy, E. T. ..... Rochester
Lee, H. M. ..... Minneapolis
Lee, H. W. ..... Brainerd
Lee, J. B. ..... Rochester
Lee, M. J., Jr. ..... Rochester
Lee, W. N. ..... Madison
Leemhuis, G. H. ..... Aitkin
Lehman, S. J. ..... Thief River Falls
Leibold, H. H. ..... Parkers Prairie
Leick, R. M. ..... St. Paul
Leitch, Archibald ..... St. Paul
Leland, H. R. ..... Minneapolis
Lemon, W. E. ..... Rochester
Lemon, W. S. ..... Rochester
Lenander, M. E. L. ..... St. Peter
Lenarz, A. J. ..... Rowerville
Lende, Norman ..... Faribault
Lenont, C. B. ..... Virginia
Lenz, J. R. ..... Morton
Lenz, O. A. ..... Minneapolis
Leonard, L. J. ..... Minneapolis
Leonard, Samuel ..... Minneapolis
Leopard, B. A. ..... Albert Lea
Lepak, F. J. ..... Duluth
Lepak, J. A. ..... St. Paul
†Lerche, William ..... Cable, Wis.
Lerner, A. R. ..... Minneapolis
Leven, N. L. ..... St. Paul
Leverenz, C. W. ..... St. Paul
Levin, Bert ..... St. Paul
Levitt, G. X. ..... St. Paul
Lewis, A. J. ..... Henning
Lewis, C. B. ..... St. Cloud
Lewis, C. W. ..... Henning
Lexa, F. J. ..... Lonsdale
Libert, J. N. ..... St. Cloud
Lick, C. L. ..... St. Paul
Liedloff, A. G. ..... Mankato
Lien, R. J. ..... St. Paul
Liffrig, W. W. ..... Red Wing
Lightbourn, E. L. ..... St. Paul
Lilleberg, N. J. ..... St. Paul
Lillehei, E. J. ..... Robbinsdale
Lillie, H. I. ..... Rochester
Lillie, J. C. ..... Rochester
Lima, L. R. ..... Montevideo
Lima, L. R., Jr. ..... Montevideo
Lind, C. J. ..... Minneapolis
‡Lind, C. J., Jr. ..... Minneapolis
Lindberg, A. L. ..... Wheaton
Lindberg, A. C. ..... Minneapolis
Lindberg, V. L. ..... Minneapolis
Lindblom, A. E. ..... Minneapolis
†Linde, Herman ..... Cyrus
Lindgren, R. C. ..... Minneapolis
Lindley, S. B. ..... Willmar
Lindquist, R. H. ..... Minneapolis
Linner, H. P. ..... Minneapolis
Linner, J. H. ..... Minneapolis
Lippman, E. S. ..... Minneapolis
Lippman, H. S. ..... St. Paul
Lippmann, E. W. ..... Hutchinson
Lipschultz, Oscar ..... Minneapolis
Lipscomb, P. R. ..... Rochester
Lister, K. E. ..... Minneapolis
Litchfield, J. T. ..... Minneapolis
Litman, A. B. ..... Minneapolis
Litman, S. N. ..... Duluth
†Litzenberg, J. C. ..... Minneapolis
Llewellyn, M. B. ..... Minneapolis
Lofgren, K. A. ..... Rochester
Lofsness, S. V. ..... Minneapolis
Logan, Arch, Jr. ..... Rochester
Logan, A. H. ..... Rochester
Logan, G. B. ..... Rochester
Logefeil, R. C. ..... Minneapolis
Lohmann, J. G. ..... Pipestone
Loken, Theodore ..... Ada
Loken, S. M. ..... St. Paul
Lombardi, A. A. ..... Rochester
Lommen, P. A. ..... Austin
Long, J. W. ..... Rochester
Longfellow, Helen B. W. ..Brainerd
Loofbourrow, E. H. ..... Keewatin
Loomis, E. A. ..... Minneapolis
Loomis, G. L. ..... Winona
Love, F. A. ..... Carlos
Love, J. G. ..... Rochester
Lovelady, S. B. ..... Rochester
Lovett, Beatrice R. ....Oak Terrace
Lovshin, L. L. ..... Rochester
Lowe, E. R. ..... So. St. Paul
Lowe, T. A. ..... So. St. Paul
Lowry, Elizabeth C. ..... Minneapolis
Lowry, Thomas ..... Minneapolis
Lowy, A., Jr. ..... Rochester
Loyd, Earl L. ..... Missouri
Luck, Hilda ..... Mankato
Luckemeyer, C. J. ..... St. Cloud
Ludden, T. E. ..... Rochester
Luellen, T. J. ..... Rochester
Lufkin, N. H. ..... Minneapolis
Lund, C. J. T. ..... Fergus Falls
Lund, W. J. ..... Staples
Lundberg, Ruth I. ..... Minneapolis
Lundblad, R. A. ..... Minneapolis
Lundblad, S. W. ..... Minneapolis
Lundell, C. L. ..... Granite Falls
Lundgren, A. C. ..... Minneapolis
Lundholm, A. M. ..... St. Paul
Lundquist, C. W. ..... Owatonna
Lundquist, E. F. ..... Minneapolis
Lundy, J. S. ..... Rochester
Luth, D. V. ..... Duluth
Lyman, R. W. ..... Rochester
Lynch, F. W. ..... St. Paul
Lynch, J. L. ..... Winona
Lynch, M. J. ..... Minneapolis
Lynde, O. G. ..... Los Gatos, Calif.
Lysne, Henry ..... Minneapolis
Lysne, Myron ..... Minneapolis

MacCarty, C. S. ..... Rochester
†MacCarty, W. C. ..... Rochester
†MacDonald, A. E. ..... Minneapolis
MacDonald, D. A. ..... Minneapolis
Macdonald, I. D. ..... Rochester
MacFarlane, P. H. ..... Chisholm
Mach, F. B. ..... Minneapolis
Mack, J. J. ..... Little Rock, Ark.
MacKinnon, D. C. ..... Minneapolis
Macklin, W. E., Jr. ..... Mankato
MacLean, A. R. ..... Rochester
MacMillan, D. G. ..... Minneapolis
‡MacMurtrie, W. J., Jr. ..... Maryland
Macnie, J. S. ..... Minneapolis
MacRae, G. C. ..... Duluth
Macy, Dorothy ..... Rochester
Madden, J. F. ..... St. Paul
Madland, R. S. ..... St. Paul
Maeder, E. C. ..... Minneapolis
Maertz, R. W. ..... Goodhue
Maertz, W. F. ..... St. Paul
Magath, T. B. ..... Rochester
Magney, F. H. ..... Duluth
Magnuson, A. E. ..... Wheaton
Magraw, R. M. ..... St. Paul
Mahle, D. G. ..... Plainview
Mahowald, A. ..... Albany
Maitland, E. T. ..... Jackson
Maland, C. O. ..... Minneapolis
Malerich, J. A. ..... St. Paul
Malmstrom, J. A. ..... Virginia
*Manley, J. R. ..... Duluth
†Mann, F. C. ..... Rochester
†Manson, F. M. ..... Worthington
†Marcley, W. J. ..... Minneapolis
Marek, F. H. ..... Rochester
Margulies, Harold ..... Rochester
Mariette, E. S. ..... Oak Terrace
Mark, D. B. ..... Minneapolis
Mark, Hilbert ..... Minneapolis
Marking, G. H. ..... Minneapolis
Marks, R. W. ..... St. Paul
Martin, D. L. ..... St. Paul
Martin, G. M. ..... Rochester
Martin, T. P. ..... Arlington
Martin, W. B. ..... Rochester
Martin, W. C. ..... Duluth
Martineau, J. L. ..... St. Paul
Martinson, C. J. ..... Wayzata
†Martinson, E. J. ..... Wayzata
Masson, D. M. ..... Rochester
Masson, J. C. ..... Rochester
†Matchan, G. R. ..... Minneapolis
Mattill, P. M. ..... Oak Terrace
Mattison, P. A. ..... Winona
Mattson, A. D. ..... Madison
Mattson, H. A. N. ..... Minneapolis
Maxeiner, S. R. ..... Minneapolis
Mayfield, L. H. ..... Rochester
†Mayne, R. M. ..... Duluth
Mayo, C. W. ..... Rochester
Maytum, C. K. ..... Rochester
McAdams, J. B. ..... St. Paul
McAnally, A. K. ..... Rochester
McBean, J. B. ..... Rochester
†McCaffrey, F. J. ..... Minneapolis
McCain, D. L. ..... St. Paul
McCann, D. F. ..... Bemidji
McCann, Eugene J. ..... Minneapolis
McCarten, F. M. ..... Stillwater
McCarthy, Donald ..... Minneapolis
McCarthy, J. J. ..... St. Paul
McCarthy, W. R. ..... St. Paul
McCartney, J. S. ..... Minneapolis
†McCarty, P. D. ..... Ely
McClanahan, J. H. ..... White Bear
McClanahan, T. S. ..... White Bear
McClellan, J. T. ..... Rochester
McCloud, C. N. ..... St. Paul
McConahey, W. M., Jr. ..... Rochester
McCorkle, J. K. ..... Rochester
†McCoy, Mary K. ..... Duluth
McCready, F. J. ..... Rochester
McCreight, W. G. ..... Rochester
‡McCrimmon, H. P. ..... Minneapolis
†McDaniel, Orianna ..... Minneapolis
McDonald, A. L. ..... Duluth
McDonald, J. R. ..... Rochester
McDowell, J. P. ..... St. Cloud
McElin, T. W. ..... Rochester
McEnaney, C. T. ..... Owatonna
McEwan, Alexander ..... St. Paul
McFarland, A. H. ..... Minneapolis
McGandy, R. F. ..... Minneapolis
McGeary, G. D. ..... Clarkfield
McGeary, G. E. ..... Minneapolis
McGroarty, J. J. ..... Easton
McGuff, P. E. ..... Rochester
McGuigan, H. T. ..... Red Wing
McHaffie, O. L. ..... Duluth
McInerny, M. W. ..... Minneapolis
McIntire, H. M. ..... Waseca
McIntyre, J. A. ..... Owatonna
McIver, B. A. ..... Lowry
McKaig, C. B. ..... Pine Island
McKelvey, J. L. ..... Minneapolis
McKenna, J. K. ..... Austin
McKenna, M. J. ..... Grand Rapids
McKenzie, C. H. ..... Minneapolis
McKeon, J. O. ..... Faribault
McKinlay, C. A. ..... Minneapolis
†McKinley, J. C. ..... Minneapolis
McKinney, F. S. ..... Minneapolis
McLane, Wm. O. ..... Wadena
†McLaren, Jennette M. ..Minneapolis
McLaughlin, B. H. ..... Rochester

McLaughlin, E. M. .....Winona
McLeod, J. L. .....Grand Rapids
McMahon, J. M. .....Rochester
McManus, W. F. .....Princeton
McMillan, J. T. .....Rochester
McMurtrie, W. B. .....Minneapolis
McNutt, J. R. .....Duluth
McPheeters, H. O. ....Minneapolis
McQuarrie, H. B. .....Rochester
†McQuarrie, Irvine .....Minneapolis
Mead, C. H. .....Duluth
Meade, J. R. .....St. Paul
‡Meadows, J. A., Jr. .....California
Mears, B. J. .....St. Paul
Mears, R. F. .....Northfield
Medelman, J. P. .....St. Paul
Medlin, C. F. .....Truman
Medwick, J. X. .....Rochester
Meinert, A. E. .....Winona
Melancon, J. F. .....St. Paul
Melby, Benedik ..Blooming Prairie
Mellby, O. F. ....Thief River Falls
Meller, R. L. .....Minneapolis
Melzer, G. R. .....Lyle
Menold, Wm. F. .....St. Paul
Mercil, W. F. .....Crookston
Merendino, A. A. .....St. Paul
Merkert, C. E. .....Minneapolis
Merkert, G. L. .....Minneapolis
Merner, T. B. .....St. Paul
†Merrick, Charlotte T. ....Minneapolis
†Merrill, Elisabeth .....Minneapolis
Merrill, J. G. .....Rochester
Merrill, R. W. .....Morris
Merriman, L. L. .....Duluth
Merritt, W. A. .....Rochester
Mesker, G. H. .....Cambridge
Messler, J. D. .....Rochester
Meyer, A. A. .....Melrose
Meyer, A. C. .....Rochester
Meyer, A. J. .....Minneapolis
Meyer, E. L. .....Minneapolis
Meyer, F. C. .....Kenyon
Meyer, J. O. .....Grand Rapids
Meyer, P. F. .....Faribault
Meyer, W. M. .....Rochester
Meyerding, E. A. .....St. Paul
Meyerding, H. W. .....Rochester
Mezen, J. F. .....Rochester
Michael, J. C. .....Minneapolis
Michel, H. H. .....Minneapolis
Michels, R. P. .....Willmar
Michelson, H. E. .....Minneapolis
†Mickelsen, Emma F. .....Minneapolis
Mickelson, J. C. .....Mankato
Milhaupt, E. N. .....St. Cloud
Millen, F. J. .....Rochester
Miller, E. W. .....Anoka
Miller, H. E. .....Minneapolis
Miller, Hugo E. .....Minneapolis
Miller, J. C. .....Minneapolis
Miller, J. R. .....Rochester
Miller, V. I. .....Mankato
Miller, W. A. .....New York Mills
Mills, J. L. .....Winnebago
Mills, M. D. .....Rochester
Mills, S. D. .....Rochester
Milton, J. S. .....Minneapolis
Minsky, A. A. .....Minneapolis
Minty, E. W. .....Duluth
Mitby, I. L. .....Aitkin
Mitchell, B. D. .....Minneapolis
Mitchell, E. C. .....Minneapolis
Mitchell, M. T. .....Minneapolis
Mixer, H. W. .....Minneapolis
Moberg, C. W. .....Detroit Lakes
Moe, Allen E. .....Moorhead
Moe, J. H. .....Minneapolis
Moe, R. J. .....Duluth
Moe, Thomas .....Moose Lake
Moen, J. K., Jr. .....Minneapolis
Moehn, J. T. .....Minneapolis
Moehring, H. G. .....Duluth
Moersch, F. P. .....Rochester
Moersch, H. J. .....Rochester
Moga, J. A. .....St. Paul
Molander, H. A. .....St. Paul
Mollers, T. P. .....Soudan
Monohan, Eliz. S. .....Minneapolis
Monahan, R. H., Jr., ...
International Falls
Monroe, P. B. .....Cloquet
Monserud, N. O. .....Cloquet
Monson, E. M. .....Minneapolis
Monson, L. J. .....Canby
Montgomery, G. E. .....Rochester
Montgomery, Hamilton ....Rochester
*Mooney, L. P. .....Graceville
Moos, D. J. .....Minneapolis
Moquin, Marie A. .....St. Paul
*More, C. W. .....Eveleth
Morehead, D. E. .....Owatonna
Moren, Edward .....Minneapolis
Morgan, E. H. .....Rochester
Morgan, H. O. .....Amboy
Morgan, J. L. .....Rochester
Moriarty, Berenice .....St. Paul
Moriarty, Cecile R. .....St. Paul
Mork, A. H. .....Anoka
Mork, B. O., Jr. .....Worthington
Mork, B. O., Sr. .....Worthington
Mork, F. E. .....Anoka
Morley, G. A. .....Crookston
Morlock, C. G. .....Rochester
Morris, C. R. .....Rochester
Morris, D. S. .....Rochester
Morrison, A. E., Jr. .....Rochester
Morrison, A. W. .....Minneapolis
Morrison, Charlotte J. ..Minneapolis
Morrow, J. R. .....Rochester
Morse, M. P. .....Le Roy
Morse, R. W. .....Minneapolis
Morseman, L. W. .....Hibbing
Mosby, M. E. .....Long Prairie
*Moses, J., Jr. .....Northfield
Moses, R. R. .....Kenyon
Mouritsen, G. J. .....Fergus Falls
Mueller, Selma C. .....Duluth
Muir, W. F. .....Browns Valley
Muller, A. E. ....North Saint Paul
Muller, R. T. .....St. Paul
Mulligan, A. M. .....Brainerd
Murphy, E. P. .....Minneapolis
Murphy, I. J. .....Minneapolis
Murphy, J. E. .....Marshall
Murphy, James E. .....St. Cloud
Murphy, M. E. .....Rochester
Murphy, M. H. .....Rochester
Murray, R. A. .....Hibbing
Murray, R. A. .....Rochester
Musachio, N. F. .....Foley
Musgrove, J. E. .....Rochester
Mussey, Mary E. .....Rochester
Mussey, R. D. .....Rochester
Mussey, Robert D., Jr. ....Rochester
†Musty, N. J. .....Minneapolis
Myers, J. A. .....Minneapolis
Myers, T. T. .....Rochester
Myre, C. R. .....Paynesville

Nachtwey, Robert A. .....Rochester
Naegeli, A. E. .....St. Paul
Naegeli, Frank .....Fergus Falls
Nagel, H. D. .....Waconia
Nash, L. A. .....St. Paul
Naslund, A. W. .....Minneapolis
Nauth, B. S. .....Winona
Navratil, D. R. .....Montgomery
Neal, J. M. .....Minneapolis
Nealy, D. E. .....Adrian
Neary, R. P. .....Minneapolis
Neel, H. B. .....Albert Lea
Neff, W. S. .....Virginia
Nehring, J. P. .....Preston
Neibling, H. A. .....California
Nelson, A. S. ....Thief River Falls
Nelson, Bernette G. .....Menagha
Nelson, Bernice A. .....Northome
Nelson, C. E. J. .....Albert Lea
Nelson, C. G. .....Harmony
Nelson, E. H. .....Chisholm
Nelson, E. J. .....Owatonna
Nelson, E. N. .....Minneapolis
Nelson, G. E. .....Fairfax
Nelson, H. E. .....Crookston
†Nelson, H. S. ....Los Angeles, Calif.
Nelson, K. L. .....Clara City
Nelson, L. A. .....St. Paul
Nelson, L. S. .....Hibbing
Nelson, M. C. .....Minneapolis
Nelson, M. S. .....Granite Falls
Nelson, N. H. .....Minneapolis
Nelson, N. P. .....Brainerd
Nelson, O. L. N. .....Minneapolis
Nelson, R. A. .....Fergus Falls
Nelson, R. L. .....Duluth
Nelson, W. I. .....Minneapolis
Nelson, W. O. B. .....Fergus Falls
Nesbitt, Samuel .....Minneapolis
Nesheim, M. O. .....Emmons
Nessa, C. B. .....St. Cloud
Nesset, L. B. .....Minneapolis
Neumaier, Arthur .....Glencoe
Neumann, C. A. .....Winona
New, G. B. .....Rochester
*Nichols, A. E. .....St. Paul
Nichols, D. R. .....Rochester
Nicholson, M. A. .....Duluth
Nickerson, J. R. .....Heron Lake
‡Nickeson, R. W. .....Rochester
Nielson, A. M. .....Northfield
Nietfeld, A. B. .....Warren
Nilson, H. J. .....North Mankato
Ninneman, N. N. .....Waconia
Nix, J. T. .....Rochester
Nixon, J. B. .....Crosby
Nixon, R. R. .....Rochester
Noble, J. F. .....St. Paul
Noble, J. L. .....St. Paul
Nolan, D. E. .....Dayton, Ohio
Noonan, W. J. .....Minneapolis
Noran, A. S. N. .....Minneapolis
Noran, H. H. .....Minneapolis
Norberg, C. E. .....Cloquet
Nord, R. E. .....Minneapolis
Nordin, G. T. .....Minneapolis
Nordland, M. A. .....Rochester
Nordland, Martin .....Minneapolis
Nordman, W. F. .....Mora
Norley, Theo. .....Pa.
Norman, J. F. .....Crookston
Norris, N. T. .....Caledonia
†Noth, H. W. .....Minneapolis
Novak, E. E. .....New Prague
Norval, M. A. .....Rochester
Nuebel, C. J. .....Hudson, Wisconsin
Nuessle, W. G. .....Springfield
Nuetzman, A. W. .....Faribault
Nutting, R. E. .....Duluth
Nydahl, M. J. .....Minneapolis
Nye, Katherine A. .....St. Paul
Nye, Lillian L. .....St. Paul
Nygren, W. T. .....Braham
Nylander, E. G. .....Minneapolis
Nystrom, Ruth G. .....Minneapolis

Oberg, C. M. .....Minneapolis
O'Brien, L. T. .....Breckenridge
*†O'Brien, W. A. .....Minneapolis
O'Brien, W. M. .....St. Paul
Ochsner, C. G. .....Wabasha
Ockuly, Orville .....St. Paul
O'Connor, D. C. .....Eden Valley
O'Connor, L. J. .....St. Paul
Odel, H. M. .....Rochester
Odessky, Louis .....Staten Island, N. Y.
O'Donnell, D. M. .....Ortonville
O'Donnell, J. E. .....Minneapolis
Oeljen, S. C. G. .....Waseca
*Oerting, H. .....St. Paul
Ogden, Warner .....St. Paul
Ohage, Justus, Jr. .....St. Paul
O'Hanlon, J. A. .....Lindstrom
O'Kane, T. W. .....St. Paul
O'Keefe, J. P. .....St. Cloud
Olcott, E. D. .....Rochester
Olds, G. H. .....New Richland
O'Leary, J. H. .....Foley
O'Leary, P. A. .....Rochester
Oliver, I. L. .....Graceville
Oliver, James .....Moorhead
Olmanson, E. G. .....St. Peter
Olsen, A. M. .....Rochester
Olsen, E. G. .....Minneapolis
Olsen, R. L. .....St. Paul
Olsen, Gertrude E. .....Georgetown
Olson, A. C. .....Minneapolis
Olson, A. E. .....Duluth
Olson, A. J. .....Owatonna
Olson, A. O. .....Duluth
Olson, C. A. .....St. Paul
Olson, C. J. .....Belle Plaine
Olson, D. O. C. .....Gaylord
Olson, E. A. .....Pine Island
Olson, G. E. .....West Concord
Olson, J. W. .....Minneapolis
†Olson, O. A. .....Minneapolis
*†Olson, R. G. .....Minneapolis
Olson, S. W. .....Rochester
O'Neal, Ruth .....Rochester
Onsgard, L. K. .....Houston
Oppegaard, C. L. .....Crookston
Oppegaard, M. O. .....Crookston
Oppen, E. G. .....Minneapolis
O'Reilley, B. E. .....St. Paul
Osborn, J. E. .....Rochester
Ostergaard, Erling .....Evansville
Ostergren, E. W. .....St. Paul
Otto, H. C. .....Frazee
Ouellette, A. J. .....St. Paul
Owen, C. A. J. .....Rochester
Owens, W. A. .....Montevideo
†Owre, Oscar .....Minneapolis

Paalman, R. J. .....Rochester
Page, R. L. .....St. Charles
Painter, R. C. .....Rochester
Palazzo, F. A. .....Rochester
Palen, B. J. .....Minneapolis
Palmer, C. F. .....Albert Lea
Palmer, H. A. .....Blackduck
Palmerton, E. S. .....Albert Lea
Pankratz, P. J. ....Mountain Lake
Papermaster, R. .....Two Harbors
Parke, F. F. .....Rochester
†Parker, O. W. .....Duluth
Parker, H. L. .....Rochester
Parker, R. L. .....Rochester
Parker, W. E. .....Sebeka
Parker, W. H. .....Chisholm
Parkhill, Edith M. .....Rochester
Parkin, T. W. .....Rochester
Parkinson, Dwight .....Rochester
Parson, E. I. .....Duluth
Parson, Lillian B. .....Elbow Lake

Parson, L. R. ..... Elbow Lake
Parsons, R. L. ..... Monterey
Paschall, Jack, Jr. ..... Rochester
Pasek, A. W. ..... Cloquet
Passer, A. A. ..... Olivia
Patch, O. B. ..... Duluth
Patterson, H. D. ..... Slayton
Parsons, J. G. ..... Crookston
Patterson, S. A. ..... Pennsylvania
Patterson, W. L. ..... Fergus Falls
Paulson, E. C. ..... Elbow Lake
Paulson, I. A. ..... Rochester
Paulson, T. S. ..... Fergus Falls
Pearsall, R. P. ..... Virginia
Pearson, B. F. ..... Shakopee
Pearson, C. C. ..... Rochester
Pearson, F. R. ..... St. Paul
Pearson, L. O. ..... Warroad
Pearson, M. M. ..... St. Paul
Pearson, R. T. ..... Shakopee
Pease, Gertrude L. ..... Rochester
*Peck, L. D. ..... Hastings
Pedersen, A. H. ..... St. Paul
Pedersen, R. C. ..... Duluth
Pemberton, J. de. ..... Rochester
Pender, J. W. ..... Rochester
Penhall, F. W. ..... Willmar
Penk, E. L. ..... Springfield
Penn, G. E. ..... Mankato
Pennie, D. F. ..... Duluth
Peppard, T. A. ..... Minneapolis
Perkins, R. F. ..... Rochester
Perlman, E. C. ..... Minneapolis
*Perry, C. G. ..... St. Paul
Perry, E. L. ..... Rochester
Person, J. P. ..... Albert Lea
Pertl, A. L. ..... Canby
Peters, G. A. ..... Rochester
Petersen, D. H. ..... Northfield
Petersen, G. L. ..... Minneapolis
†Petersen, J. R. ..... Minneapolis
Petersen, M. C. ..... Rochester
Petersen, R. T. ..... St. Cloud
Peterson, C. A. ..... Minneapolis
Peterson, D. B. ..... St. Paul
Peterson, E. N. ..... Virginia
Peterson, H. O. ..... St. Paul
Peterson, H. W. ..... Minneapolis
Peterson, J. L. E. ..... St. Paul
Peterson, J. H. ..... Minneapolis
Peterson, J. R. ..... Rochester
Peterson, K. H. ..... Hutchinson
Peterson, L. J. ..... Minneapolis
Peterson, N. P. ..... Minneapolis
Peterson, O. L. ..... Cokato
Peterson, O. H. ..... Minneapolis
Peterson, P. E. ..... Minneapolis
Peterson, R. A. ..... Vesta
Peterson, W. C. ..... Minneapolis
Peterson, W. E. ..... Willmar
Peterson, W. Henry ..... Minneapolis
Petit, J. V. ..... Minneapolis
Petit, L. J. ..... Minneapolis
Petraborg, H. T. ..... Aitkin
Pewters, J. T. ..... Minneapolis
Peyton, W. T. ..... Minneapolis
Pfuetze, K. H. ..... Cannon Falls
Pfunder, M. C. ..... Minneapolis
Phelps, K. A. ..... Minneapolis
Phillips, S. K. ..... Rochester
Pierce, C. H. ..... Wadena
Pierson, R. F. ..... Slayton
Piper, M. C. ..... Rochester
Piper, W. A. ..... Mountain Lake
Plass, H. F. R. ..... Minneapolis
Platou, E. S. ..... Minneapolis
Pleissner, K. W. ..... St. Louis Park
Plimpton, N. C., Jr. ..... Minneapolis
Plondke, F. J. ..... St. Paul
Plummer, W. A. ..... Rochester
Pohl, J. F. M. ..... Minneapolis
Poirier, J. A. ..... Forest Lake
Pollack, A. A. ..... Rochester
Pollard, D. W. ..... Minneapolis
Pollard, W. H., Jr. ..... Duluth
Polley, H. F. ..... Rochester
Pollock, D. K. ..... Minneapolis
Polzak, J. A. ..... Minneapolis
Ponterio, J. E. ..... Shakopee
Pool, T. L. ..... Rochester
Poore, T. N. ..... Rochester
Popp, W. C. ..... Rochester
Poppe, F. H. ..... Minneapolis
Porter, C. B. ..... Rochester
Porter, O. M. ..... Willmar
Potek, D. M. ..... International Falls
Potter, R. B. ..... Minneapolis
Potter, R. T. ..... Rochester
Potthoff, C. J. ..... Washington, D. C.
Power, J. E. ..... Duluth
Powers, F. H. ..... Rochester
Prangen, A. D. ..... Rochester
Pratt, I. H., Jr. ..... Rochester
†Pratt, Fred J., Sr. ..... Minneapolis
Pratt, F. J., Jr. ..... Minneapolis

Pratt, W. C. ..... Rochester
Preine, I. A. ..... Minneapolis
Preisinger, J. W. ..... Renville
Prendergast, H. J. ..... St. Paul
Preston, P. J. ..... Minneapolis
Prickman, L. E. ..... Rochester
Pridgen, J. E. ..... Rochester
Priest, R. E. ..... Minneapolis
Priestly, J. T. ..... Rochester
Prim, J. A. ..... Minneapolis
Prins, L. R. ..... Albert Lea
Proeschel, R. K. ..... Willmar
Proffitt, W. E. ..... Minneapolis
Proshek, C. E. ..... Minneapolis
Prough, W. A. ..... Rochester
Pruitt, R. D. ..... Rochester
Pugh, D. G. ..... Rochester
Purves, G. H. ..... Hendricks
Pumula, E. E. ..... Warren
Putman, H. C., Jr. ..... Rochester
Puumala, R. H. ..... Cloquet
Pyle, Marjorie M ..... Rochester

Quanstrom, V. E. ..... Brainerd
Quattlebaum, Frank ..... St. Paul
Quello, R. O. B. ..... Minneapolis
Quist, H. W. ..... Minneapolis
Quist, H. W., Jr. ..... Minneapolis

Raadquist, C. S. ..... Hibbing
Radabaugh, R. C. ..... Hastings
Raetz, S. J. ..... Maple Lake
Raihala, John ..... Virginia
Raiter, R. F. ..... Cloquet
Ralph, J. R. ..... St. Paul
Ralston, D. E. ..... Rochester
Ramsey, W. H., II ..... Rochester
†Ramsey, W. R. ..... St. Paul
Randall, A. M. ..... Ashby
Randall, L. M. ..... Rochester
Rang, R. H. ..... Rochester
Ransom, H. R. ..... Osseo
Ransom, M. L. ..... Hancock
Rasmussen, R. C. ..... St. Paul
Rasmussen, W. C. ..... Rochester
Raszkowski, H. J. ..... Frederic, Wisconsin
†Ratcliffe, J. J. ..... Aitkin
Rea, C. E. ..... St. Paul
Reader, D. R. ..... Minneapolis
Reed, Paul ..... Virginia
Reeve, E. T. ..... Elbow Lake
Reff, A. R. ..... Crookston
Regan, J. J. ..... Minneapolis
Regnier, E. A. ..... Minneapolis
Reid, J. W. ..... St. Paul
Reid, L. M. ..... Excelsior
Reif, H. A. ..... Minneapolis
Reif, H. J. ..... St. Cloud
Reiley, R. E. ..... Minneapolis
†Reineke, G. F. ..... New Ulm
*†Reiter, W. H. ..... Shakopee
Reitmann, J. H. ..... Hastings
ReMine, W. H., Jr. ..... Rochester
Remington, I. H. ..... Rochester
Remsberg, R. R. ..... Tracy
Replogle, W. H. ..... Los Angeles, Cal.
Reynolds, J. L. ..... Rochester
Reynolds, J. S. ..... Minneapolis
Rice, C. O. ..... Minneapolis
Rice, H. G. ..... Aitkin
Rice, R. R. ..... Rochester
Richards, E. T. F. ..... St. Paul
Richards, W. B. ..... St. Cloud
Richardson, H. E. ..... St. Paul
Richardson, R. J. ..... St. Paul
Richdorf, L. F. ..... Minneapolis
Rick, P. F. W. ..... St. Paul
Ricks, H. C., Jr. ..... Rochester
Ridgway, A. M. ..... Annandale
Ridley, R. W. ..... Rochester
Riegel, G. S. ..... Taylors Falls
Rieke, W. W. ..... Wayzata
Rigler, L. G. ..... Minneapolis
Rinehart, R. E. ..... Wheeler, Oregon
Ringle, O. F. ..... Walker
Rinkey, Eugene ..... St. Paul
Riordan, Elsie M. ..... Minneapolis
Ripple, R. J. ..... New London
Risch, R. E. ..... Minneapolis
Risser, A. F. ..... Stewartville
Ritchie, W. P. ..... St. Paul
Ritt, A. E. ..... St. Paul
Rivers, A. B. ..... Rochester
Rizer, D. K. ..... Minneapolis
Rizer, R. I. ..... Minneapolis
Roan, O. M. ..... Minneapolis
Robb, E. F. ..... Minneapolis
†Robbins, C. P. ..... Winona
Robbins, O. F. ..... Minneapolis
Roberts, L. J. ..... Minneapolis
Roberts, N. J. ..... Rochester
Roberts, O. W. ..... Owatonna
Roberts, S. W. ..... Minneapolis
Roberts, W. B. ..... Minneapolis
†Robertson, J. B. ..... Minneapolis
Robertson, P. A. ..... Austin

Robilliard, C. M. ..... Faribault
†Robinson, J. M. ..... Goshen, N. Y.
*Robitshek, E. C. ..... Minneapolis
Rockwood, Philo H. ..... Fergus Falls
Rodda, F. C. ..... Minneapolis
Rodgers, C. L. ..... Minneapolis
Rodgers, R. S. ..... Minneapolis
Rodwell, T. F. ..... Mahnomen
Roehlke, A. B. ..... Elk River
Roemer, H. J. ..... Winona
Rogers, C. W. ..... Winona
Rogers, J. D. ..... Rochester
Rogers, S. F. ..... St. Paul
Rogne, W. G. ..... Spring Grove
Roholt, C. L. ..... Waverly
Roholt, H. B. ..... Waverly
Rohrer, C. A. ..... Waterville
Rokala, H. E. ..... Virginia
Rolig, D. H. ..... St. Paul
†Rood, D. C. ..... Duluth
Rose, J. T. ..... Lakefield
Rosenbaum, E. E. ..... Rochester
Rosendahl, F. G. ..... Minneapolis
Rosenfield, A. B. ..... Minneapolis
Rosenholtz, Burton ..... St. Paul
Rosenthal, F. H. ..... Austin
Rosenthal, Robert ..... St. Paul
Rosenwald, R. M. ..... Minneapolis
Roskilly, G. C. P. ..... Minneapolis
Ross, A. J. ..... Minneapolis
Rossberg, R. A. ..... Morris
Rossen, R. X. ..... Hastings
Roth, F. D. ..... Lewiston
Roth, G. C. ..... St. Paul
Rothschild, H. J. ..... St. Paul
Roust, H. A. ..... Montevideo
Routley, E. F. ..... Rochester
‡Rovelstad, R. A. ..... Northfield
Rowe, O. W. ..... Duluth
Rowe, W. H. ..... Fairmont
Rowles, E. K. ..... Coleraine
Roy, P. C. ..... St. Paul
Rucker, C. W. ..... Rochester
Rucker, W. H. ..... Minneapolis
Rud, N. E. ..... Minneapolis
Rudell, G. L. ..... Minneapolis
Rudie, P. S. ..... Duluth
Ruff, C. C. ..... Rochester
Ruggles, G. M ..... Forest Lake
†Ruhberg, G. N. ..... St. Paul
Rulison, E. T., Jr. ..... Rochester
Rumpf, C. W. ..... Faribault
†Rumpf, W. H. ..... Faribault
Russ, H. H. ..... Blue Earth
Russeth, A. N. ..... Minneapolis
Rusten, E. M. ..... Minneapolis
Rutherford, W. C. ..... Nisswa
Rutledge, L. H. ..... Detroit Lakes
Ryan, J. D. ..... St. Paul
Ryan, J. J. ..... St. Paul
Ryan, J. M. ..... St. Paul
Ryan, M. E. ..... St. Paul
Ryan, W. J. ..... Duluth
Rydburg, W. C. ..... Brooten
Rydell, J. R. ..... Rochester
Ryding, V. T. ..... Howard Lake
Rydland, A. D. ..... Crookston
Rygh, H. N. ..... Atwater
Rynearson, E. H. ..... Rochester

Sach-Rowitz, Alvan ..... Moose Lake
Sadler W. P., Jr. ..... Minneapolis
Saffert, C. A. ..... New Ulm
Sahr, W. G. C. ..... Hutchinson
St. Cyr, K. J. ..... Robbinsdale
Salassa, R. M. ..... Rochester
Salterman, B. I. ..... Minneapolis
Salter, R. A. ..... Virginia
Samson, E. R. ..... Stillwater
Samuelson, L. G. ..... Mankato
Samuelson, Samuel ..... Minneapolis
Sandell, S. T. ..... Nopeming
Sanderson, A. G. ..... Deerwood
†Sanderson, E. T. ..... Alexandria
Sandt, K. E. ..... Minneapolis
Sandven, N. O. ..... Paynesville
Sanford, A. H. ..... Rochester
Sanford, J. A. ..... Farmington
Sanford, R. A. ..... Rochester
Sarff, O. E. ..... Duluth
Satersmoen, Theodore ..... Pelican Rapids
Sather, Allen ..... Fosston
Sather, E. R. ..... Alexandria
Sather, G. A. ..... Fosston
Sather, R. N. ..... Mora
Sather, R. O. ..... Crookston
Satterlee, H. W. ..... Lewiston
Satterlund, V. L. ..... St. Paul
Sauer, W. G. ..... Rochester
Savage F. J. ..... St. Paul
Sawatzky, W. A. ..... Minneapolis
Sax, M. H. ..... Duluth
Sax, S. G. ..... Duluth
Saylor, H. L. ..... Rochester
Sayre, G. P. ..... Rochester

Scandalis, P. R. ..... Rochester
Scanlon, R. L. ..... Rochester
Schaaf, F. H. K. ..... Minneapolis
Schade, F. L. ..... Worthington
Schaefer, J. F. ..... Owatonna
Schaefer, Samuel ..... Winona
Schaefer, W. G. ..... Minneapolis
Schafer, L. A. ..... Rochester
Schamber, W. F. ..... Parkers Prairie
Schatz, F. J. ..... St. Cloud
Scheifley, C. H. ..... Rochester
†Scheldrup, N. H. ..... Minneapolis
Scherer, L. R. ..... Minneapolis
Schiele, B. C. ..... Minneapolis
Schimelpfenig, G. T. ..... Chaska
Schlesselman, G. H. ..... Anoka
Schlesselman, J. T. ..... Mankato
Schlotter, D. C. ..... Rochester
Schmidt, G. F. ..... Minneapolis
Schmidt, H. R. ..... Winona
Schmidt, H. W. ..... Rochester
†Schmidt, Paul A. ..... Good Thunder
Schmidt, P. G., Jr. ..... Granite Falls
Schmidt, W. R. ..... Worthington
Schmidtke, R. L. ..... St. Paul
*†Schmitt, A. F. ..... Minneapolis
†Schmitt, S. C. ..... Los Angeles, Calif.
Schmitz, A. A. ..... Mankato
Schmitz, E. J. ..... Holdingford
†Schneider, J. P. ..... Minneapolis
Schneider, L. E. ..... Duluth
Schneider, P. J. ..... Adams
Schneider, R. A. ..... Minneapolis
†Schneidman, N. R. ..... Minneapolis
Schoch, R. B. J. ..... St. Paul
Scholpp, O. W. ..... Hutchinson
Scholten, R. A. ..... Rochester
Schons, Edward ..... St. Paul
Schottler, G. J. ..... Dexter
Schottler, M. E. ..... Minneapolis
Schroder, C. H. ..... Duluth
Schroeckenstein, H. F. ..... St. Paul
Schroeppel, J. E. ..... Winthrop
†Schuldt, F. C. ..... St. Paul
Schultz, J. A. ..... Albert Lea
Schultz, J. H. ..... Minneapolis
Schultz, P. J. ..... Minneapolis
Schulze, A. G. ..... St. Paul
†Schussler, O. F. ..... Minneapolis
Schutz, E. S. ..... Mountain Lake
Schwartz, V. J. ..... Minneapolis
Schweiger, T. R. ..... Hibbing
†Schwyzer, Gustav ..... Minneapolis
Schwyzer, H. C. ..... St. Paul
†Scofield, C. L. ..... Benson
Scott, E. E. ..... St. Paul
†Scott, F. H. ..... Minneapolis
Scott, H. G. ..... Minneapolis
Seaberg, J. A. ..... Minneapolis
†Seashore, Gilbert ..... Minneapolis
Seashore, R. T. ..... Duluth
Seebach, L. M. ..... Minneapolis
Seham, Max ..... Minneapolis
Seifert, M. H. ..... Excelsior
Seifert, O. J. ..... New Ulm
Seiler, H. H. ..... Rochester
Seitz, S. B. ..... Barnesville
Sekhan, M. S. ..... St. Paul
Seldon, T. H. ..... Rochester
Seljeskog, S. R. ..... Minneapolis
Sellers, G. K. ..... Dassel
Selmo, J. D. ..... Norwood
†Senkler, G. E. ..... St. Paul
Senn, E. W. ..... Owatonna
Sether, A. F. ..... Ruthton
Setzer, H. J. ..... St. Paul
Seybold, W. D. ..... Rochester
Shanlorf, J. F. ..... Minneapolis
Shannon, W. R. ..... St. Paul
Shaperman, Eva P. ..... Minneapolis
Shapiro, M. J. ..... Minneapolis
Sharp, D. V. ..... Minneapolis
Shaw, A. W. ..... Virginia
Shaw, H. A. ..... Minneapolis
Shea, A. W. ..... Minneapolis
Shedlov, Abraham ..... Fosston
Sheedy, C. L. ..... Austin
Sheehan, J. R. ..... St. Paul
Shellito, J. G. ..... Rochester
†Shellman, J. L. ..... Pacific Palisades, Calif.
Sheppard, C. G. ..... Hutchinson
Sher, D. A. ..... Virginia
Sher, Lewis ..... Minneapolis
Sheridan, Viola E. ..... Rochester
Sherman, A. G. ..... St. Peter
Sherman, C. H. ..... Bayport
Sherman, C. L. ..... Luverne
Sherman, H. T. ..... Cambridge
Sherman, R. V. ..... Red Wing
Sherwood, G. E. ..... Kimball
Shick, R. M. ..... Rochester
Shimonek, S. W. ..... St. Paul
Shonyo, E. S. ..... Utah
Short, C. A., Jr. ..... Rochester
Short, Jacob ..... St. Paul
Shullenberger, C. C. ..... Rochester
Siegel, Clarence ..... St. Paul
Siegel, J. S. ..... Virginia
Siegmann, W. C. ..... Minneapolis
Silver, J. D. ..... Minneapolis
Simison, Carl ..... Barnesville
Simons, B. H. ..... Chaska
Simons, E. J. ..... Swanville
†Simons, J. H. ..... Minneapolis
Simons, L. T. ..... St. Paul
Simonson, D. B. ..... Minneapolis
Simonton, K. MacL. ..... Rochester
Simpson, E. DeW. ..... Minneapolis
Sinamark, Andrew ..... Hibbing
Singer, B. J. ..... St. Paul
Sinykin, M. B. ..... Minneapolis
Siperstein, D. M. ..... Minneapolis
Sisk, H. E. ..... Hastings
Sisler, C. E. ..... Grand Rapids
Sivertsen, A. ..... Mound
Sivertsen, Ivar ..... Minneapolis
Sjoding, J. D. ..... Mankato
Sjostrom, L. E. ..... St. Peter
Skaug, H. M. ..... Chatfield
‡Skillern, P. G., Jr. ..... Rochester
†Skinner, H. O. ..... St. Paul
Skjold, A. C. ..... Minneapolis
Skragg, H. ..... Elmore
Skroch, E. E. ..... Rochester
Slater, S. A. ..... Worthington
Slaughter, O. L. ..... Rochester
Sloan, W. P. ..... Rochester
Slocumb, C. H. ..... Rochester
Smisek, E. A. ..... St. Paul
Smisek, F. M. E. ..... Minneapolis
Smith, Adam M. ..... Minneapolis
Smith, Archie M. ..... Minneapolis
Smith, B. A. ..... Crosby
Smith, Baxter A., Jr. ..... Minneapolis
Smith, C. M. ..... Duluth
Smith, D. E. ..... Rochester
Smith, F. L. ..... Rochester
Smith, F. R. ..... Rochester
Smith, H. L. ..... Rochester
Smith, H. R. ..... Minneapolis
Smith, L. G. ..... Montevideo
Smith, L. A. ..... Balaton
Smith, L. A. ..... Rochester
†Smith, M. W. ..... Red Wing
Smith, N. D. ..... Rochester
Smith, N. M. ..... Minneapolis
Smith, N. R. ..... Minneapolis
Smith, O. O., Jr. ..... Rochester
Smith, P. M. ..... Lake Crystal
Smith, V. D. E. ..... St. Paul
Smith, W. R. ..... Grand Marais
Snell, A. M. ..... Rochester
Snider, G. G. ..... Rochester
Snyder, C. D. ..... Kiester
Snyder, G. W. ..... St. Paul
Snyker, O. E. ..... Ely
Soderlind, R. T. ..... Minneapolis
Sogge, L. L. ..... Windom
Sohlberg, O. I. ..... St. Paul
Sohmer, A. E. ..... Mankato
Solhaug, Sam B., Jr. ..... Appleton
Solhaug, S. B. ..... Minneapolis
Solsem, F. N. S. ..... Ah-Gwah-Ching
Sommers, Ben ..... St. Paul
Sonnesyn, N. N. ..... Le Sueur
Sorem, M. B. ..... St. Paul
Sorum, F. T. ..... Jasper
Soucheray, P. H. ..... St. Paul
Souster, B. B. ..... St. Paul
Spang, A. J. ..... Duluth
Spang, J. S. ..... Duluth
Spano, J. P. ..... Minneapolis
Spar. A. A. ..... Rochester
Spaulding, C. A. ..... Rochester
Spear, R. C. ..... Rochester
Spencer, J. R. ..... Rochester
Spicer, F. W. ..... Duluth
Spink, W. W. ..... Minneapolis
Sprafka, J. M. ..... St. Paul
Sprague, R. G. ..... Rochester
Spratt, C. N. ..... Minneapolis
‡Spray, Paul ..... Rochester
Spurbeck, R. G. ..... Cloquet
Spurzem, R. J. ..... Anoka
Stafford, C. E. ..... Baudette
Stahr, A. C. ..... Hopkins
Stam, John ..... Worthington
Stanford, C. E. ..... Minneapolis
Stangl, P. E. ..... St. Cloud
Stanley, C. R. ..... Worthington
Starekow, M. D. ..... Thief River Falls
Stark, D. B. ..... Rochester
Stark, F. M. ..... Rochester
‡Starks, W. O. ..... Rochester
State, David ..... Minneapolis
Stauffer, M. H. ..... Rochester
Steffens, L. A. ..... Red Wing
Stein, K. E. ..... Lakeville
Stein, R. J. ..... Pierz
Steinberg, C. L. ..... St. Paul
Steiner, I. W. ..... Winona
Stelter, L. A. ..... Minneapolis
Stemsrud, H. L. ..... Alexandria
Stenerodden, S. C. ..... St. Cloud
Stennes, J. L. ..... Minneapolis
Stensgaard, K. I. ..... Thief River Falls
Stenstrom, Annette E. T. ..... Minneapolis
Stephan, E. L. ..... Hinckley
Sterner, E. G. ..... St. Paul
Sterner, E. R. ..... St. Paul
Sterner, J. J. ..... St. Paul
Sterner, O. W. ..... St. Paul
Stevens, J. E., Jr. ..... Rochester
*Stevens, J. ..... Gonvick
Stevenson, B. M. ..... Fulda
Stevenson, F. W. ..... Faribault
Stewart, Alexander ..... St. Paul
Stewart, D. E. ..... St. Paul
Stewart, N. E. ..... St. Petersburg, Fla.
Steward, R. I. ..... Minneapolis
Stickney, J. M. ..... Rochester
Stillwell, W. C. ..... Mankato
Stillwell, G. G. ..... Rochester
Stokes, G. D. ..... Rochester
Stoesser, A. V. ..... Minneapolis
Stolpestad, A. H. ..... St. Paul
Stolpestad, H. L. ..... St. Paul
†Stomel, Joseph ..... Los Angeles, Calif.
Stone, N. F. ..... Mankato
Stone, S. P. ..... Minneapolis
Storrs, R. P. ..... Rochester
†Strachauer, A. C. ..... Minneapolis
Stransky, T. W. ..... Owatonna
Strate, G. E. ..... St. Paul
Strathern, C. S. ..... St. Peter
Strathern, F. P. ..... St. Peter
Strathern, M. L. ..... Gilbert
Stratte, A. K. ..... Pine City
Stratte, H. C. ..... Windom
Straus, M. L. ..... St. Paul
Strauss, E. C. ..... Duluth
Street, Bernard ..... Northfield
Strem, E. L. ..... St. Paul
Strobel, W. G. ..... Duluth
Stroebel, C. F., Jr. ..... Rochester
Strom, G. W. ..... Minneapolis
Stromgren, D. T. ..... Minneapolis
Stromme, W. B. ..... Minneapolis
Strout, G. E. ..... Minneapolis
Stuart, A. B. ..... Cloquet
Stuart, R. L. ..... Rochester
Studer, D. J. ..... Faribault
Stuhr, J. W. ..... Stillwater
Sturley, R. F. ..... St. Paul
Sturre, I. R. ..... Minneapolis
Sukov, Marvin ..... Minneapolis
Sullivan, R. M. ..... Minneapolis
Sundberg, Carol L. ..... Rochester
†Sutherland, C. G. ..... Rochester
Sutherland, H. N. ..... Ely
Sutton, H. R. ..... Hoffman
Svien, H. J. ..... Rochester
Swanson, J. A. ..... St. Paul
Swanson, R. E. ..... Minneapolis
Swanson, R. R. ..... Albert Lea
Swanson, V. F. ..... Minneapolis
Swedberg, W. A. ..... Duluth
Swedenburg, P. A. ..... Glenwood
Sweeney, A. R., Jr. ..... Rochester
Sweetser, H. B., Jr. ..... Minneapolis
†Sweetser, H. B., Sr. ..... Minneapolis
Sweetser, T. H. ..... Minneapolis
Sweitzer, S. E. ..... Minneapolis
†Swendseen, C. G. ..... Minneapolis
Swendson, J. J. ..... St. Paul
Swensen, R. G. ..... North Branch
Swenson, A. O. ..... Duluth
Swenson, O. J. ..... Waseca
Swezey, B. F. ..... Buffalo

Tangen, G. M. ..... Minneapolis
Tanquist, E. J. ..... Alexandria
Taylor, B. E. ..... Rochester
Taylor, C. W. ..... Duluth
Taylor, J. H. ..... Minneapolis
Teich, K. W. ..... Duluth
Teisberg, C. B. ..... St. Paul
Teisberg, J. E. ..... St. Paul
Telford, V. J. ..... Litchfield
Tenner, R. J. ..... Minneapolis
Terrell, B. J. ..... Nopeming
Tesch, G. H. ..... Elk River
Thabes, J. A. ..... Brainerd
Thabes, J. A., Jr. ..... Brainerd
Thayer, E. A. ..... Fairmont
Thielen, R. D. ..... St. Michael
Thom, J. G. ..... Rochester
Thomas, G. F. ..... Minneapolis
Thomas, G. H. ..... Minneapolis
Thompson, Arthur ..... Cokato
Thompson, C. O. ..... Hendricks
Thompson, F. A. ..... St. Paul
†Thompson, G. J. ..... Rochester
Thompson, H. B. ..... Fergus Falls

Thompson, V. C. . Marine-on-St. Croix
Thompson, W. H. . . . . Minneapolis
Thomson, J. M. . . . . Minneapolis
Thoreson, M. C. Bernice . So. St. Paul
Thysell, D. M. . . . . Minneapolis
Thysell, F. A. . . . . Moorhead
Thysell, V. D. . . . . Hawley
Tibbetts, M. H. . . . . Duluth
Tifft, C. R. . . . . St. Paul
Tilderquist, D. L. . . . . Duluth
Tillisch, J. H. . . . . Rochester
Tingdale, A. C. . . . . Minneapolis
Tingdale, Carlvle . . . . . Hibbing
Tinkham, R. G. . . . . Minneapolis
Titrud, L. A. . . . . **Minneapolis**
Tobin, J. D. . . . . Minneapolis
Tobin, J. R., Jr. . . . . Rochester
Todd, R. L. . . . . Minneapolis
Tompkins, S. F. . . . . Rochester
Tondreau, R. L. . . . . Rochester
Tosseland, N. E. . . . . Rochester
Trach, B. B. . . . . Minneapolis
Tracht, R. R. . . . . St. Paul
Traeger, C. A. . . . . Faribault
Travis, J. S. . . . . St. Paul
Traxler, J. F. . . . . Henderson
Tregilgas, H. R. . . . . So. St. Paul
Trommald, G. B. K. . . . . Anoka
Troost, H. B. . . . . Mankato
Trow, J. E. . . . . Minneapolis
Trow, W. H. . . . . Minneapolis
Troxil, Elizabeth . . . . . Minneapolis
Trueman, H. S. . . . . Minneapolis
Truesdale, C. W. . . . . Glencoe
Trutna, T. J. . . . . Silver Lake
Tucker, W. B. . . . . Minneapolis
Tudor, R. B. . . . . Minneapolis
Tunstead, H. J. . . . . Minneapolis
Tuohy, E. L. . . . . Duluth
Turbak, C. E. . . . . Herman
†Turnacliff, D. D. . . . . St. Paul
Tweedy, Geo. J. . . . . Winona
Tweedy, J. A. . . . . Winona
Tweedy, R. B. . . . . Winona
Tyler, S. H. . . . . Raymond

Ude, W. H. . . . . Minneapolis
Uhler, W. M. . . . . Rochester
Uhley, C. G. . . . . Crookston
Uihlein, Alfred . . . . . Rochester
Ulrich, H. L. . . . . Minneapolis
Underdahl, L. O. . . . . Rochester
Undine, C. A. . . . . Minneapolis
Upshaw, Betty Y. . . . . Rochester
Upshaw, J. E. . . . . Rochester
Urberg, S. E. . . . . Duluth

Vadheim, A. L. . . . . Tyler
Valentine, W. H. . . . . Tracy
Van Cleve, H. P., Jr. . . Dodge Center
Vandersluis, C. W. . . . . Bemidji
Van Herik, Martin . . . . . Rochester
Van Meier, Henry . . . . . Stillwater
Van Rooy, G. T. . . Thief River Falls
Van Ryzin, D. J. . . . . Duluth
Van Valkenberg, J. D. . . . . Floodwood
Varco, R. L. . . . . St. Paul
Vaughan, V. M. . . . . Truman
Vaughn, L. D. . . . . Rochester
Veirs, D. M. . . . . St. Paul
Veirs Ruby J. S. . . . . St. Paul
Venables, A. E. . . . . St. Paul
Veranth, L. A. . . . . St. Cloud
Vezina, J. C. . . . . Mapleton
Vik, A. E. . . . . Minneapolis
Vik, Melvin . . . . . Onamia
Virnig, M. P. . . . . Wells
Virnig, R. P. . . . . Wells
Vogel, H. A. L. . . . . New Ulm
*Vogel, J. H. . . . . New Ulm
Vollmer, F. J. . . . . Winona
Von der Weyer, W. H. . . . . St. Paul

Waas, C. W. . . . . St. Paul
Wadd, C. T. . . . . Janesville
Wagener, H. P. . . . . Rochester
Wagner, N. W. . . . . Graceville
Wahlquist, H. F. . . . . Minneapolis
Wakim, Khalil G. . . . . Rochester
Wakefield, E. G. . . . . Rochester
Walch, A. E. . . . . Minneapolis
Waldron C. W. . . . . Minneapolis
Walfred, K. A. . . . . St. Cloud
†Walker, A. E. . . . . Duluth
Walker, A. E. . . . . St. Paul
Walker, S. A. . . . . Minneapolis
Wall, C. R. . . . . Minneapolis
Wallace, M. O. . . . . Duluth
Waller, J. D. . . . . Pine City
Walsh, A. C. . . . . Rochester
Walsh, F. M. . . . . Minneapolis
Walsh, J. F. . . . . Olivia
Walsh, M. N. . . . . Rochester
Walsh, W. T. . . . . Minneapolis
Walter, C. W. . . . . St. Paul
Walters, Waltman . . . . . Rochester
Wang, J. C. . . . . Rochester
Wangensteen, O. H. . . . . Minneapolis
Ward, P. A. . . . . Minneapolis
†Ward, P. D. . . . . St. Paul
Warner, J. J. . . . . Perham
Warren, C. A. . . . . St. Paul
Wasson, L. F. . . . . Alexandria
Watkins, C. H. . . . . Rochester
Watkins, D. H. . . . . Rochester
Watson, A. M. . . . . Royalton
Watson, C. G. . . . . Minneapolis
Watson, C. J. . . . . Minneapolis
†Watson, J. D. . . . . Minneapolis
Watson, P. T. . . . . Northfield
Watson, P. T. . . . . St. Paul
Watson, R. M. . . . Thief River Falls
Watson, S. W. . . . . Royalton
Watson, W. J. . . . . Newport
Watts, C. F. . . . . Rochester
Watts, W. E. . . . . Rochester
Watz, C. E. . . . . St. Paul
Waugh, J. M. . . . . Rochester
Weaver, M. M. . . . . Minneapolis
Weaver, P. H. . . . . Faribault
Webb, E. A. . . . . Minneapolis
Webb, R. C. . . . . Minneapolis
Webber, F. L. . . . . St. Paul
Weber, H. M. . . . . Rochester
Weed, L. A. . . . . Rochester
Weir, J. F. . . . . Rochester
Weis, B. A. . . . . St. Paul
Weisberg, Maurice . . . . . St. Paul
*Weiser, G. B. . . . . Rochester
Weisman, S. J. . . . . Rochester
Wellman, T. G. . . . . Lake City
Wellman, W. E. . . . . Rochester
Wells, A. H. . . . . Duluth
Wells, G. R. . . . . Rochester
Wells, J. J. . . . . Rochester
Wells, W. B. . . . . Jackson
Wenner, W. T. . . . . St. Cloud
Wentworth, A. J. . . . . Mankato
Wenzel, G. P. . . . . St. Paul
Wenzel, R. E. . . . . Blue Earth
Werner, George . . . . . Minneapolis
Werner, O. S. . . . . Cambridge
Werner, R. F. . . . . Minneapolis
Wessel, Morris A. . . . . Rochester
†West, Catherine C. . . . Minneapolis
West, Elmer J. . . . . Faribault
Westby, Magnus . . . . . Madison
Westby, Nels . . . . . Madison
†Westerman, A. E. . . . . Montgomery
Westerman, F. C. . . . . Montgomery
‡Westphal, K. F. . . . . Minneapolis
Westrup, J. E. . . . . Lanesboro
Wethall, A. G. . . . . Minneapolis
Wetherby, Macnider . . . . . Minneapolis
Wetzel, E. V. . . . . Minneapolis
Weum, T. W. . . . . Minneapolis
Wheeler, D. W. . . . . Duluth
†Wheeler, M. W. . . . . St. Paul
†Whitacre, J. C. . . . . St. Paul
White, A. A. . . . . Minneapolis
White, E. F., Jr. . . Seattle, Washington
White, N. K. . . . . Rochester
White, S. M. . . . . Minneapolis
White, W. D. . . . . Minneapolis
Whitesell, F. B., Jr. . . . . Rochester
Whitesell, L. A. . . . . Minneapolis
Whitney, R. A. . . . . Cambridge
Whitson, S. A. . . . . Albert Lea
Whittemore, D. D. . . . . Bemidji
Widen, W. F. . . . . Minneapolis
Wiechman, F. H. . . . . Minneapolis
Wilcox, A. E. . . . . Minneapolis
Wilder, K. W. . . . . Minneapolis
Wilder, R. L. . . . . Minneapolis
Wilder, R. M. . . . . Rochester
Wilder, R. M., Jr. . . . . Minneapolis
Wilken, P. A. . . . . Minneapolis
Wilkinson, Stella L. . . . . Faribault
Wilkowske, R. J. . . . . Owatonna
Will, C. B. . . . . Bertha
Will, W. W. . . . . Bertha
†Willcutt, C. E. . . . . Phoenix, Ariz.
Williams, A. B. . . . . St. Paul
Williams, B. F. P. . . . . Duluth
Williams, C. A. . . . . Pipestone
Williams, C. K. . . . . St. Paul
Williams, H. L., Jr. . . . . Rochester
Williams, H. O. . . . . Lake Crystal
Williams, J. A. . . . . St. Paul
Williams, L. A. . . . . Slayton
Williams, M. M. . . . Ah-Gwah-Ching
Williams, M. R. . . . . Cannon Falls
†Williams, R. V. . . . . Rushford
†Williams, Robert . . . . . Carthage, Ill.
Williams, R. R., Jr. . . . . Rochester
Williamson, H. A. . . . . Lake Heron
Willius, F. A. . . . . Rochester
Wilmer, H. A. . . . . Rochester
Wilmot, C. A. . . . . Litchfield
Wilmot, H. E. . . . . Litchfield
Wilson, C. E. . . . . Blue Earth
Wilson, F. C. . . . . Austin
Wilson, G. T. . . . . Rochester
Wilson, J. A. . . . . St. Paul
Wilson, J. V. . . . . St. Paul
Wilson, R. B. . . . . Rochester
Wilson, R. H. . . . . Winona
Wilson, V. O. . . . . Minneapolis
Wilson, W. E. . . . . Northfield
†Wilson, W. F. . . . . Lake City
Wiltrout, I. G. . . . . Oslo
Winchester, E. C. . . . . Rochester
Winchester, W. W. . . . . Rochester
Wingquist, C. G. . . . . Crosby
Winnick, J. B. . . . . St. Paul
Winter, J. A. . . . . Duluth
Winther, Nora M. C. . . . . Minneapolis
Wipperman, F. F. . . . . Minneapolis
Witham, C. A. . . . . Minneapolis
Withrow, M. E. . . . . International Falls
Wittich, F. W. . . . . Minneapolis
Wittrock, L. H. . . . . Watkins
Wohlrabe, A. A. . . . . Minneapolis
Wohlrabe, C. F. . . . . No. Mankato
Wohlrabe, E. J. . . . . Springfield
Wold, K. C. . . . . St. Paul
Wold, L. E. . . . . Rochester
Wolf, A. H. . . . . Minneapolis
Wolff, H. J. . . . . St. Paul
Wolkoff, H. J. . . . . St. Paul
Wollaeger, E. E. . . . . Rochester
Wolstan, , S. D. . . . . Minneota
Woltman, H. W. . . . . Rochester
Wood, G. O. . . . . Rochester
Wood, H. G. . . . . Rochester
Woodard, D. E. . . . . Rochester
Woolner, L. B. . . . . Rochester
Word, H. L. . . . . St. Paul
Worden, R. E. . . . . Rochester
Workman, W. G. . . . . Tracy
Wray, W. E. . . . . Campbell
*†Wright, C. D. . . . . Minneapolis
Wright, R. R. . . . . Austin
†Wright, S. G. . . . . Minneapolis
Wright, W. S. . . . . Minneapolis
*Wunder, H. E. . . . . Shakopee
Wyatt, O. S. . . . . Minneapolis
Wynne, H. M. N. . . . . Minneapolis

Yaeger, W. W. . . . . Marshall
Ylvisaker, R. S. . . . . Minneapolis
Yoerg, O. W. . . . . Minneapolis
Young, H. H. . . . . Rochester
Young, T. O. . . . . Duluth
Younger, L. I. . . . . Winona
Youngren, E. R. . . . . St. Paul
Youngstrom, C. S. . . . . Ortonville

Zachman, A. H. . . . . Melrose
Zachman, J. L. . . . . St. Paul
Zagaria, J. F. . . . . Rochester
Zaworski, L. A. . . . . Minneapolis
Zemke, E. E. . . . . Fairmont
Zierold, A. A. . . . . Minneapolis
Zimmermann, H. B. . . . . St. Paul
Zinter, F. A. . . . . Minneapolis
Ziskin, Thomas . . . . . Minneapolis
†Zlatovski, M. L. . . . . Duluth
Zorn, E. L. . . . . Erskine

Communications

LABORATORY SERVICE

To The Editor:

In the April (1948) issue of MINNESOTA MEDICINE appears a communication addressed to the Editor from Dr. C. J. Ehrenberg, commenting on the objections of the practicing clinical pathologists to a resolution approved by the House of Delegates of the Minnesota State Medical Association, petitioning the State Board of Health to include routine Rh typing in its laboratory service (see MINNESOTA MEDICINE, 31:81-82, January, 1948).

Dr. Ehrenberg intimates that the State Board of Health Laboratory would be doing only the typing of blood for Rh factor and no more. Experience has clearly shown that such a limit cannot be placed upon the State Board Laboratory, once the practice is sanctioned by the medical profession. Not only would the State Laboratory be willing and anxious to extend its facilities to include all phases of the complex Rh work, in which it is fully capable, but, I am afraid, the practicing physician would practically force it to render services connected with the Rh typing, such as the sensitization test, the Anti-Rh titre determination, as well as testing of blood of the husbands and children, for no other reason than that they are done free and thus "cushion" the cost of medical care.

Syphilis is a public health problem only in a limited sense. Personally, I believe, the medical profession with the existing private diagnostic facilities at its disposal, can and should control the spread of the disease. Free Wassermann testing was introduced as a war measure during World War I. In some states it was continued to benefit only the indigent. This was soon proved unworkable, since the doctors would have the test performed free, regardless of the patient's financial ability (and in some instances the doctors themselves appear to pocket the "fees" for the tests). Today, all state laboratories are doing, not only the serologic tests for syphilis, but in some instances, giving expert consultation service in diagnosis and treatment. The same trend would follow if we should let the State Board Laboratory take charge of the mere routine Rh test for married women.

It is well known that cancer diagnosis is the next target of the State Board of Health. Several states have already inaugurated this service free to all physicians.

Dr. Ehrenberg states, "Controversy as to the principle involved becomes trivial." The clinical pathologists, as practicing physicians, are fighting for the principle, which, to them and I hope to all thinking practitioners of medicine, is paramount in the issue. Once it is compromised, any and all phases of medical practice, be it clinical, diagnostic, or therapeutic, may and can be interpreted, as one chooses, as a public health or human problem "which transcends limited interest of the individual."

In the final disposal of the resolution, let the doctors decide on the merit of the principle involved which should govern their own practice, and not on the expediency which is another wedge into the gradually widening path leading to socialized medicine.

KANO IKEDA, M.D.

April 26, 1948.

BLUE CROSS-BLUE SHIELD NATIONAL ASSOCIATION

To the Editor:

In regard to the proposed Blue Cross-Blue Shield national organization which was discussed at the Blue Shield-Blue Cross conference in Los Angeles on March 30, the Minnesota Hospital Service Association had present its executive director and Minnesota Medical Service Inc., its executive director. Mr. F. Manley Brist, counsel for Minnesota Medical Service Inc., also attended and Dr. Adson from Rochester attended as a member of the Associated Medical Care Plans. Action taken regarding this national association was as follows:

"Following the motion passed at the joint session of the Blue Cross and Blue Shield Plans to the effect that there be established an effective and democratic association of Blue Cross and Blue Shield Plans to serve local Plans in the achievement of their fullest usefulness, your Committee has again considered the entire problem of a more effective association for facilitating and strengthening the work of the Blue Cross and Blue Shield Commissions.

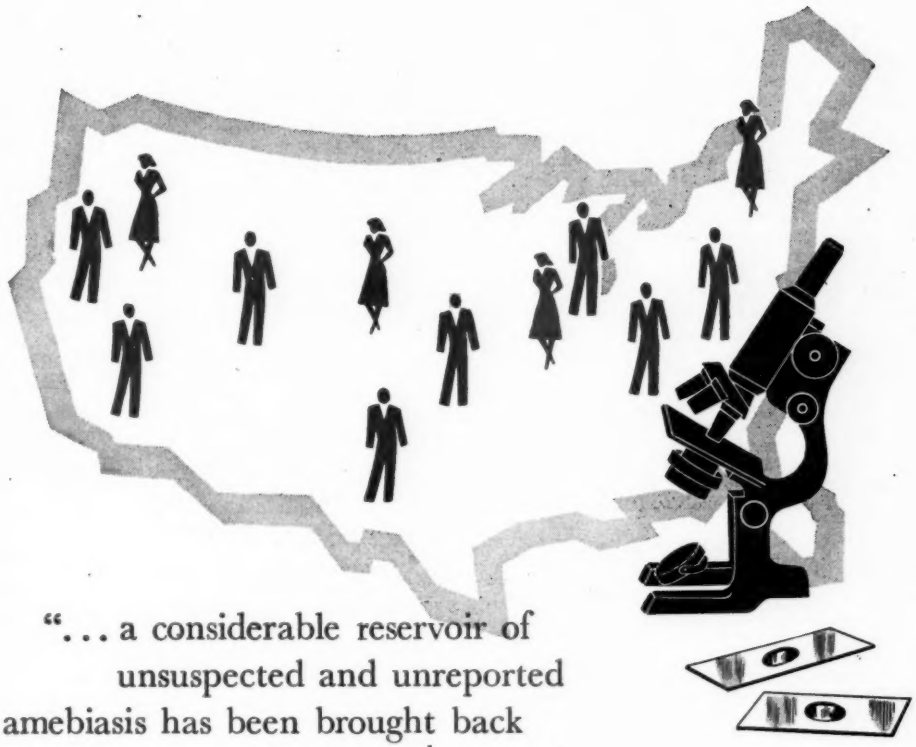
"1. It is our recommendation to the Blue Cross and Blue Shield Commissions and to the Conferences of Blue Cross and Blue Shield Plans that an association be created, empowered to do any and all things necessary to serve the interest of the public and the Plans in providing prepayment facilities so that we may stimulate and put into effect a health program that will be to the benefit of the people of this country.

"2. We recommend that the present Commission structures be not disturbed at this time, and that a new *association* be formed which will supplement the work of the two Commissions.

"3. We recommend to the Blue Cross and Blue Shield Plans and to their respective Commissions that the two Commissions be directed to organize such an *association* at the earliest possible time and submit a written plan of operation to the respective Plans for approval within a six months' period.

"4. It is the unanimous judgment of your Committee that it would be desirable for the Commissions to consider the following basis of representation: The Board of Governors of the *Association* shall be composed of one Blue Cross Director, one Blue Cross Trustee, one Blue Shield Director and one Blue Shield Trustee elected from each of the twelve districts; there shall also be four representatives of the American Hospital Association and four representatives of the American Medical Association on the Board of Governors, the Board of Governors to serve one-third, one year, one-third, two years, and one-third, three years. It is also our judgment that in view of the fact that the Board of Governors will consist of fifty-six persons, a strong executive committee should be chosen to administer the work between meetings. We recommend that the

(Continued on Page 586)



"... a considerable reservoir of unsuspected and unreported amebiasis has been brought back to the United States...."[1]

Urging clinicians and roentgenologists to be on the alert for signs of this disease, Wilbur and Camp[2] note the frequency with which the radiologist finds unsuspected lesions, ultimately diagnosed as amebiasis.

Diodoquin . . . high-iodine-containing amebacide . . . "is a valuable addition to the therapeutic remedies available for the treatment of this insidious and intractable disease."[3]

Diodoquin may be employed in acute or latent forms of amebiasis. Relatively nontoxic, well tolerated, Diodoquin does not produce unpleasant purgation and may be administered over prolonged periods.

ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION

DIODOQUIN

(5,7-diiodo-8-hydroxyquinoline)

SEARLE

RESEARCH IN THE SERVICE OF MEDICINE

1. *Editorial: The Problem of Amebiasis, J.A.M.A.* 134:*1095 (July 26) 1947.*
2. *Wilbur, D. L., and Camp, J. D.: Amebic Disease of the Cecum: Clinical and Radiological Aspects, Gastroenterology* 7:*535 (Nov.) 1946.*
3. *Morton, T. C. St. C.: Diodoquin for Chronic Amoebic Dysentery in Service Personnel Invalided from India, Brit. M.J.* 1:*831 (June 16) 1945.*

Diodoquin is the registered trademark of G. D. Searle & Co., Chicago 80, Illinois.

BLUE CROSS—BLUE SHIELD

(Continued from Page 584)

executive committee consist of the chief executive officer of the *association* and the officers of the *association*, who shall be elected annually by the governing board. In addition, the governing board shall elect annually additionl members of the executive committee up to a total of eleven. The members so elected must include one of the members of the Board of Governors representing the American Hospital Association and one of the members of the Board of Governors representing the American Medical Association and, exclusive of the chief executive officer and the American Hospital Association and American Medical Association representatives, consist of two Blue Cross Trustees, two Blue Cross Directors, two Blue Shield Trustees and two Blue Shield Directors. Not more than three members of the executive committee shall come from any one district.

"Among the purposes set forth for this association, as outlined above, there shall be included the organization of a national service agency or plan on a non-profit basis, to provide prepaid hospital and medical care, which will supplement coverage of Local Plans where desirable and which will provide coverage where no Blue Cross or Blue Shield Plan is available to national employers.

"Your Committee is in agreement that every effort must be made to maintain and protect individual Plan autonomy. The Committee believes that one of the greatest hazards to be faced in the establishment of our national association with a subsidiary non-profit Insurance Corporation is that the latter corporation might syphon off local business. Your Committee therefore recommends that the Insurance Corporation transmit all funds collected less reasonable operating expenses (to be determined by the Board of Governors) to the local Blue Cross or Blue Shield Plans. Each Plan would then provide all benefits to subscribers under its regular contract, and also administer the coverage (referred to above) made available through the Insurance Corporation. In this way, all local relations and contracts with hospitals and doctors would be maintained even though variations in benefits for national employers might be in effect. Under the proposal as submitted, each Plan will retain its own subscribers in national accounts. Each Plan will issue its own subscription agreements and deal with the subscribers enrolled through national employers as though no intermediary were employed except for payment of subscription rates."

Until the national association can be formulated and approved or disapproved by each individual Blue Cross Plan board of trustees and Blue Shield board of directors, the following action was taken in regard to Dr. Paul R. Hawley by the Joint Executive Committee of the Blue Cross and Blue Shield Commissions:

"Present.—J. Douglas Colman, Louis H. Pink, F. P. G. Lattner, Richard M. Jones, L. Howard Schriver, M.D., Barrett E. Nelson, M.D., Howard Hassard, Jay C. Ketchum, F. L. Feierabend, M.D., Frank E. Smith, and Paul R. Hawley, M.D.

"The meeting convened at 4:40 p.m., March 26, 1948, Mr. J. Douglas Colman serving as chairman of the meeting, having been chosen by lot. The immediate matters of joint interest to the Blue Cross and Blue Shield Commissions attendant upon Dr. Hawley's assumption of duties as chief executive officer were discussed at length by the group. It was agreed that the following recommendations would be made to the Blue Cross and Blue Shield Commissions by their respective executive committees in attendance at this meeting.

"1. That three members each from the executive committees of the Blue Cross Commission and Blue Shield Commission serve as the Joint Executive Committee to administer the joint undertakings of the two Commissions.

"2. Dr. Hawley will report to and be solely responsible to the Joint Executive Committee on all matters of joint concern to the Blue Cross and Blue Shield Commissions. He will be directly responsible to the Blue Cross and Blue Shield Commissions, respectively, only on such matters as in his judgment are of sole concern to either of these bodies.

"3. The directors of the Blue Cross and Blue Shield Commissions, respectively, shall be administratively responsible to Dr. Hawley and through him to the Blue Cross and Blue Shield Commissions, respectively.

"4. That the annual meeting of both Blue Cross and Blue Shield Plans should be held jointly at a date in the Fall of 1948, to be selected by the Joint Executive Committee.

"5. That the Joint Executive Committee should select its chairman, determine its own procedures, and that its chairman should alternate between representatives of Blue Cross and Blue Shield Plans semi-annually, and that the chairman first be selected by the Joint Executive Committee following the annual meeting of Blue Cross and Blue Shield Plans in the Fall of 1948.

"6. That the principle be established that the areas included within the respective districts of the Blue Shield Plans and the Blue Cross Plans should be identical.

"The matter of sharing of joint expenses incurred in the future joint activities undertaken by the Blue Cross and Blue Shield Commissions was discussed and it was agreed that this should be referred to the joint meeting of the two Commissions, with the understanding that whatever division of expenses was agreed upon should apply to all joint activities and that there should not be any selective division of expenses applying to specific joint activities. The representatives of the Blue Shield Commission suggested that some more equitable sharing of expenses than the tentative 80-20 suggestion be considered. The representatives of the Blue Cross Commission made it clear that any pro ration of these expenses would be entirely acceptable to them.

"The matter of the sharing of the expenses of the current Joint Conference of Plans was discussed and it was agreed that this should be referred to the joint meeting of the Commissions for their decision.

"The matter of suitable office quarters for Dr. Hawley and the staffs of the two Commissions was discussed at length. It was agreed to recommend to each Commission that the entire staffs of both Commissions be quartered at a single location and this location be other than that now occupied by the staff of either Commission."

ARTHUR M. CALVIN, *Executive Director*
Minnesota Hospital Service Association

WOMAN'S AUXILIARY

Nicollet-Le Sueur

The Auxiliary to the Nicollet-Le Sueur Medical Society held a tea Wednesday, April 14, at Rundstrom Hall on the Gustavus Adolphus campus, St. Peter. Dr. Robert N. Barr, Minneapolis, guest speaker, presented the subject of "Cancer." The meeting was open to the public.

At the same time high school and college girls were invited to hear a talk given by several county nurses, the college nurse and the public school nurse on "Shortage of Nurses and Need for Recruitment of Girls for Nursing."

Ramsey County

In observance of National Health Week, the Auxiliary to the Ramsey County Medical Society was host to representatives of clubs and civic organizations at a guest day meeting, Wednesday, April 14, 1948, in the medical library, Lowry Medical Arts Building.

Dr. Stewart C. Thomson, associate professor in the University of Minnesota medical school, spoke on "Looking Backward and Forward in Health." Motion pictures of rehabilitation work at Veterans' hospital among spastic children were shown.

Organizations which had exhibits for the meeting included the Minnesota Public Health association, Dr. E. A. Meyerding, executive secretary; Minnesota Society for the Prevention of Blindness, Mrs. Dorothy Hamilton, executive secretary; American Cancer Society, Inc., Allan Stone, director; School Health, Dr. G. W. Snyder, school physician; Minnesota State Department of Health, William Griffith, director; Minnesota Heart Association, Thomas Morrow, executive secretary, and enrollment committee of the Minnesota Nurses' Association, Mrs. Dolores Colesworthy, chairman.

Mrs. Louis Benepe, auxiliary president, presided at the gathering, which was followed by a tea.

Renville County

The Auxiliary to the Renville County Medical Society met Tuesday evening, April 13, 1948 at the New Clock Cafe at Olivia at 7 P.M. for a steak dinner. No business meeting was held. Members preferred to stay at the joint meeting with the Medical Society to hear Dr. Miller of Minneapolis speak on "Neurosis in General Practice."

Stearns-Benton

The Auxiliary to the Stearns-Benton Medical Society met Friday evening, March 19, 1948 at the home of Mrs. E. N. Milhaupt, St. Cloud. Assistant hostesses were Mrs. E. V. Wetzel and Mrs. J. E. Conway.

Mrs. Julius Buscher and Mrs. T. N. Fleming reported on the State Health meeting recently held in Minneapolis. Mrs. Wm. Friesleben asked for articles for the layette the Auxiliary maintains for needy mothers. Reports

were given by the following chairmen: Mrs. R. N. Jones, Red Cross and Postwar Planning; Mrs. S. J. Raetz, Historian; Mrs. Carl Luckemeyer and Mrs. E. V. Wetzel, Membership, who reported Mrs. Lawrence Kuhlmann of Melrose as their newest member; Mrs. Joseph B. Gaida, Publicity. Mrs. T. W. Hovorka, treasurer, reported on the financial status of the Auxiliary.

Mrs. Jones introduced the speaker of the evening, Miss Martha Van Brussels, who gave an instructive and interesting talk on "What St. Cloud is Doing for Its Crippled and Handicapped Children." She divided her talk into four points: (1) History of the project, (2) Educational progress, (3) Social Aspect, (4) Advantages of Children attending Summer Camp, financed through the sale of Easter Seals.

Nineteen members answered roll call. During the coffee hour Mrs. Buscher poured.

Washington County

The Auxiliary to the Washington County Medical Society met Tuesday April 13, 1948 at Stillwater. The Dutch treat luncheon was held at the Grand Cafe. Guest speakers, both from Minneapolis, were Mrs. Harold Wahlquist, president-elect of the State Medical Auxiliary and Mrs. F. H. K. Schaaf, president of Hennepin County Auxiliary.

Minnesota Academy of Medicine

Meeting of January 14, 1948

The Annual President's Meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, January 14, 1948. Dinner was served at 7 o'clock, and the meeting was called to order at 8:15 by the President, Dr. T. A. Peppard.

There were fifty-five members and four guests present.

The following Past Presidents of the Academy attended: Drs. Henry L. Ulrich, John E. Hynes, J. C. Litzenberg, R. T. La Vake, Carl B. Drake, J. A. Johnson, Martin Nordland, Harry B. Zimmermann, A. G. Schulze, S. E. Sweitzer, and the retiring President, Dr. Ernest M. Hammes.

Dr. Wallace Cole was master of ceremonies and called on Drs. Hynes and Litzenberg for short speeches.

Dr. E. M. Hammes, of Saint Paul, then gave his address as retiring president, on "The Drug Addict," which appears on page 481 of this issue.

The paper was discussed by Drs. Adson, Hastings, and Hammes in closing.

The meeting was adjourned.

A. E. CARDLE, *Secretary*

Of General Interest

In Mahnomen, Dr. Kenneth W. Covey and Dr. Kenneth A. Danford moved into newly remodeled offices on March 15.

* * *

Dr. L. M. Evans of Sauk Rapids served as chairman of the cancer fund drive conducted in the village during the month of April.

* * *

A free tuberculosis clinic was held in the county nurse's office in Brainerd on April 10. In charge of the clinic was Dr. A. G. Saunderson.

* * *

In Olivia on March 10, Dr. A. A. Passer spoke on heart disease and the Minnesota Heart Association at a meeting of the local American Legion Auxiliary.

* * *

Dr. J. Emery Frank, Marshall, was elected commander of the Mongeau-Tholen Post of the Veterans of Foreign Wars at a meeting of the organization on March 10.

* * *

At a meeting of the Seventh District Medical Society in Sioux Falls, S. Dak., on March 30, Dr. W. B. Martin of Rochester presented a paper entitled "Physical Medicine in General Practice."

* * *

Participating in a basic science course for army officers at Walter Reed Hospital in Washington, D. C., on March 26 and 27, Dr. W. E. Herrell of Rochester presented a series of lectures on antibiotic agents.

* * *

Dr. K. B. Corbin, Rochester, spoke on "The History and Neurologic Examination in Cerebral Localization" at a meeting of the Department of Neurology of the University of Minnesota Medical School on March 25.

* * *

"The Rh Factor in Pregnancy" was the title of a talk given by Dr. Edward A. Banner, Rochester, at a meeting of the Blue Earth Valley Medical Society at Fairmont on March 25.

* * *

At the dedication of a new science building at Concordia College in Moorhead, Dr. Stanley W. Olson, assistant director of the Mayo Foundation, spoke on "The Application of Basic Sciences to Modern Medicine."

* * *

Dr. Avery De Hart Prangen, Rochester, was elected president of the Minnesota Academy of Ophthalmology and Otolaryngology when the organization met on March 12.

* * *

About the middle of March, Dr. D. H. Garlock of Bemidji went to Philadelphia to attend the graduation of his son, Grant Garlock, who received his doctor of medicine degree from Hahnemann Medical College.

During the last week of March, Dr. S. B. Seitz of Barnesville was in Chicago taking a postgraduate course at the Cook County Hospital Graduate School of Medicine.

* * *

After completing a three-year fellowship at the Mayo Clinic on April 1, Dr. Leonard L. Lovshin moved to Cleveland to become a member of the staff of the Crile Clinic.

* * *

Dr. Hermina Hartig, Minneapolis, discussed the work of the Minneapolis Public School Health Department at the regular monthly meeting of the Deaconess Hospital auxiliary in Minneapolis on March 19.

* * *

A talk on cancer was given by Dr. F. C. Closuit, Aitkin, at a meeting of the Aitkin Lions Club on March 31. Dr. Closuit spoke in the interests of the cancer fund drive which was then getting underway.

* * *

Principal speaker at a meeting of the Jefferson Parent-Teacher Association in Duluth on April 13 was Dr. E. Irvine Parson, Duluth, who presented a health talk.

* * *

In April, Dr. Harry Berge opened offices for the general practice of medicine in Isle. He is located in newly remodeled quarters in the Thorsten Building in that city.

* * *

Among Minnesota physicians attending a meeting of the American College of Surgeons in Minneapolis, March 15 and 16, were Dr. L. H. Rutledge and Dr. A. R. Ellingson, both of Detroit Lakes.

* * *

In St. Louis on March 18, Dr. Robert E. Priest, Minneapolis, spoke at a meeting of the otolaryngology group at Washington University, on the subject, "Tracheotomy in Bulbar Poliomyelitis."

* * *

Assisting in the presentation of a basic science course for army officers at the Army Medical Center in Washington, D. C., during the week of April 5, Dr. W. F. Kvale of Rochester gave a series of lectures on peripheral vascular diseases.

* * *

"Rheumatic Heart Disease" was the topic presented by Dr. A. R. Barnes, Rochester, president of the American Heart Association, when he addressed the members of the Queen City Post of the American Legion Auxiliary on March 23.

* * *

A postgraduate course on physical medicine for the internist, under the sponsorship of the American College

of Physicians, was conducted in Rochester during the week of March 22 to 26. The course was under the direction of Dr. F. H. Krusen of the Mayo Clinic.

* * *

At a meeting of the Medical Society of the County of New York, held in New York City on March 22, Dr. J. R. McDonald, Rochester, presented a paper entitled "The Detection of Pulmonary Neoplasms by the Cytology of Sputum."

* * *

Opening of the Johnson-Haberle Clinic in downtown Thief River Falls was announced on March 11 by Dr. H. C. Johnson and Dr. C. A. Haberle of that city. The clinic occupies fourteen rooms on the first floor of a newly constructed building.

* * *

Dr. Deane W. Benton, formerly of New Ulm, has become associated with the Boyd Clinic in Long Beach, California. He began his duties there on April 15. For the past two years Dr. Benton was associated with Dr. Howard A. Vogel in New Ulm.

* * *

Late in March, Dr. L. B. Kiriluk of Hallock became associated in practice with Dr. J. S. Collins in Wabasha. A graduate of the University of Minnesota Medical School in 1945, Dr. Kiriluk served in the army from April, 1946, to March 10 of this year.

* * *

In Albert Lea on May 1, Dr. E. T. Richlitz became associated in practice with Dr. F. G. Folken. A graduate of Marquette University, Dr. Richlitz has taken postgraduate work at the University of Southern California and has served for five years in the armed forces.

* * *

Dr. Jerome T. Syverton has been appointed professor and head of the Department of Bacteriology and Immunology in the University of Minnesota Medical School, it was announced April 9. He succeeds the late Dr. Robert G. Green.

* * *

While in California attending a conference of the American College of Physicians in San Francisco in April, Dr. and Mrs. Russell Sather, Crookston, visited relatives in Los Angeles, then returned to Crookston on April 26.

* * *

President of the Duluth Heart Association is Dr. Robert L. Nelson, Duluth, who was recently elected to head the organization which will carry out the work of the National Heart Association in northeastern Minnesota.

* * *

In Washington, D. C., on April 8 and 9, Dr. Robert R. Kierland of Rochester participated in the April symposium of the Syphilis Study Section of the United States Public Health Service. He presented a paper entitled "The Treatment of Neurospyhilis with a Combination of Malaria and Penicillin."

* * *

Announcement was made on March 11 that Dr. Robert F. Mears and Dr. Joseph C. Belshe, both of

Northfield, had entered into a partnership agreement. Dr. Mears has practiced in Northfield for several years. Dr. Belshe, following his discharge from the army, opened an office in Northfield early this year.

* * *

"The Allergic Child Can Be Happy" was the title of an address presented by Dr. A. V. Stoesser, professor of pediatrics at the University of Minnesota, when he appeared on a program sponsored by the homemaker's section of the Minnesota Home Economics Association in Minneapolis on April 3.

* * *

Formal opening of Dr. C. D. Snyder's new office building in Kiester took place on April 10 when an afternoon open house was held. Construction work on the brick structure, which contains offices, examination rooms and a reception room, was completed earlier in the month.

* * *

Rheumatic fever was discussed by Dr. Charles H. Slocumb, Rochester, at a meeting of the Pre-School Mothers Club in Northfield on April 13. An assistant professor of medicine with the Mayo Foundation, Dr. Slocumb is a member of the Executive Committee of the American Rheumatism Association.

* * *

Dr. E. L. Tuohy, chief of laboratories at St. Mary's Hospital, Duluth, was one of the speakers at the 1948 Duluth Cancer Institute on April 9. Featured speaker at both the afternoon and evening sessions of the institute was Dr. Hayden C. Nicholson of the National Research Council.

* * *

Honorary degree of Doctor of Science was awarded to Dr. Alfred W. Adson, Rochester, by his alma mater, the University of Nebraska, at graduation exercises of the Nebraska College of Medicine on April 3. The degree was given in recognition of Dr. Adson's outstanding contributions to surgery of the central nervous system.

* * *

The Academy-International of Medicine has compiled a revised edition of its catalogue of surgical, medical and dental films for use in programs of medical and dental societies. Copies of the catalogue may be obtained from the Academy-International of Medicine, 214 West Sixth Street, Topeka, Kansas.

* * *

Between April 27 and May 6, Mantoux tests were administered to approximately 900 Owatonna school children in the seventh through the twelfth grades, under a program sponsored by the county Christmas Seal organization. In charge of the testing program was Dr. Kathleen Jordan, representing the Minnesota Public Health Association.

* * *

On April 9, Dr. Edward T. Clarke closed his office in Buhl and prepared to leave for Houston, Texas. He had practiced in Buhl since December, 1945, when

he went there to fill the vacancy caused by the death of Dr. John L. Burton. Before moving to Buhl in 1945, Dr. Clarke studied at the Mayo Clinic and served in the army for four years.

* * *

Toastmaster at the annual dinner of the Washington County Public Health Nursing Service, held in Stillwater on April 19, was Dr. F. M. McCarten of that city. Among the speakers he introduced was Dr. Hilbert Mark, director of the division of tuberculosis of the Minnesota Department of Health, who spoke on "Suggested Plan of Organization of County Chest Survey."

* * *

New member of the staff of the Interstate Clinic in Red Wing is Dr. Clarence W. Wasmund, formerly of Brooklyn, N. Y., who joined the clinic early in April as head of the Eye, Ear, Nose and Throat Department.

A graduate of the Long Island College of Medicine, Dr. Wasmund interned at Kings County Hospital, Brooklyn, and later served for two years as resident eye surgeon at Long Island College Hospital.

* * *

The fiftieth anniversary of the establishment of Psi chapter of Alpha Kappa Kappa, medical fraternity, at the University of Minnesota, was observed at a dinner in Minneapolis on April 9. Among the alumni expected to attend were four of the original organizers: Dr. William H. Condit and Dr. Samuel E. Sweitzer, both of Minneapolis; Dr. Charles B. Lenont, Virginia, and Dr. N. O. Ramstad, Bismarck, N. Dak.

* * *

After more than a year of practice at 1144 Lowry Medical Arts Building, Saint Paul, Dr. George V. H. Kleifgen moved to Jamestown, N. Dak., on May 1, to become a surgeon in the Jamestown Clinic. His former office is now occupied by Dr. Coleman Connolly.

Dr. Kleifgen began private practice in Saint Paul in January, 1947, after completing a fellowship in surgery at the Mayo Clinic.

* * *

The Four-County Medical Society, representing medical groups in Olmsted, Houston, Fillmore and Dodge counties, voted in March to contribute $1,000 to help defray expenses of conducting chest x-ray surveys in the four counties. A check for $250 was presented to the Christmas Seal organization in Rochester to aid in the x-ray survey then being conducted in Olmsted County. Similar checks will be presented in each of the other three counties when surveys are held there.

* * *

After several weeks of convalescence following an operation, Dr. L. V. Berghs, Owatonna, resumed the full duties of his practice late in March. During his absence his practice had been conducted by Dr. W. H. Peterson of Litchfield. On April 15, Dr. Peterson moved to Owatonna to establish a permanent home and to be an assistant to Dr. Berghs. A graduate of the Uni-

versity of Minnesota Medical School, Dr. Peterson served his internship at Sacramento County Hospital, Sacramento, California.

* * *

Dr. G. Charles Wilcox, a native of Brainerd, arrived in St. Peter on March 24, one month after his discharge from the army, to become associated in practice with Dr. C. S. Strathern. A graduate of the University of Minnesota Medical School in 1943, Dr. Wilcox interned at Miller Hospital in Saint Paul, then spent two more years there with a residency in surgery. In 1946 he entered the army where he specialized in the treatment of eye, ear, nose and throat diseases.

* * *

Principal speaker at a luncheon in the Saint Paul Athletic Club on April 1, Dr. Owen H. Wangensteen, professor of surgery at the University of Minnesota, launched the American Cancer Society's educational and fund-raising campaign in Saint Paul. Stating that more deaths from cancer can be expected as the age of the population increases, he said that cancer detection centers like the one recently established at the University "remain the promise of the future to people of our own generation."

* * *

More than a half million dollars will be given by United States and Canadian life insurance companies for research in heart disease in 1948. This raises to $1,800,000 the total donated by the Life Insurance Medical Research Fund for this purpose since 1945. Thirty-one hospitals, medical colleges and special research clinics and fourteen individual doctors will share in these donations for research. Approximately $18,900 has been allocated to Dr. Maurice B. Visscher of the University of Minnesota for research on physical factors in cardiovascular function.

* * *

Three lectures were presented by Dr. H. J. Moersch, Rochester, at the twenty-first annual spring graduate course of the Gill Memorial Eye, Ear and Throat Hospital in Roanoke, Virginia, early in April. Titles of the lectures were "Value of Bronchoscopy in the Diagnosis of Pulmonary Disease," "Hiatal Hernia" and "Nebulization in the Treatment of Tracheobronchial Disease." On April 8, at a meeting of the staff of the Medical College of Virginia Hospital, in Richmond, Dr. Moersch spoke on "Treatment of Esophageal Varices by the Injection of a Sclerosing Solution."

* * *

The role of discipline in the emotional development of the child was discussed by Dr. Edward Dyer Anderson, Minneapolis, at an open dinner meeting held by the Duluth Mental Hygiene clinic board in Duluth on March 30. Dr. Anderson, a clinical associate professor of pediatrics at the University of Minnesota, was in general pediatric practice before serving as a captain in the navy in World War II. Since his return to civilian life he has limited his practice to the emotional problems of children and adolescents. He is president-elect of the Hennepin County Medical Society.

Baby-sitters were frowned upon by Dr. Benjamin Spock, Rochester, when he spoke at the Midwestern Conference on Nursery Education in Minneapolis on April 3. Pointing out that babies who are looked after by a different baby-sitter every night may grow up with various anxieties and other serious characteristics, Dr. Spock stated, "At the age when children form their strongest emotional attachments to their parents and need that kind of security, they're being cared for by a string of strangers." Dr. Spock is director of the Rochester child health project.

* * *

A new office building was opened by Dr. A. D. Mattson in St. James on April 5. A graduate of the University of Minnesota Medical School in 1939, Dr. Mattson interned at St. Mary's Hospital in Duluth, then became associated with Dr. C. J. Henry at Milaca for one year. In 1942 he began four years of service in the army, three years of which were spent in China with the 14th Air Force. After his discharge he lived in Madison for a year and was affiliated with the Madison Clinic. While his new building was being constructed at St. James, Dr. Mattson accepted a temporary appointment to the staff of the state hospital at St. Peter.

* * *

A three-day continuation course in cardiovascular diseases was conducted at the Center for Continuation Study at the University of Minnesota on April 15, 16 and 17. Among the lecturers for the course were Dr. George E. Fahr, professor of medicine, who spoke on diagnosis and treatment of acute coronary thrombosis, and Dr. John S. Gillam, medical fellow in obstetrics and gynecology, who described care of the obstetrical patient with heart disease. Other subjects discussed at the conference included rheumatic heart disease in children, recent advances in the use of cardiac drugs, and diagnosis of congenital heart disease.

* * *

An appreciation dinner was given in Wayzata on May 3 for Dr. Thomas J. Devereaux, a practitioner in Wayzata for twenty-seven years.

Waitresses for the dinner, which was attended by 250 friends of the doctor, were young ladies who had been ushered into the world by Dr. Devereaux. Clellan Card, Minneapolis radio personality, acted as master of ceremonies for a program which followed the dinner. Although Dr. Devereaux had given no indication of retiring, the dinner was given for him by local residents who wanted to show their appreciation for his years of service. Date chosen for the occasion was the physician's birthday.

* * *

The annual Duluth Clinic lectures, held at the University of Minnesota on May 11 and 12, were delivered by Dr. Arthur Grollman, professor of experimental medicine at Southwestern University, Dallas, Texas.

On May 11, Dr. Grollman spoke on "Recent Advances in the Pathogenesis and Treatment of Hypertension," and on May 12, his subject was "The Thyroid Gland and Its Disorders." At an informal seminar on May 12,

he led a discussion on "The Interrelationship of the Endocrine Organs."

In Duluth on May 13, Dr. Grollman spoke at the Duluth Clinic on the subject, "The Hypothalamus and Its Disorders."

* * *

Dr. Thomas J. Kenyon has become associated with Dr. John A. Lepak in the practice of internal medicine, with offices at 1065 Lowry Medical Arts Building, Saint Paul.

After graduating from the University of Minnesota Medical School in 1937, Dr. Kenyon obtained a masters degree in pathology and hematology, then served as pathologist at St. Joseph's Hospital in Saint Paul until he entered the army. While in military service he was head of the pathology department of Northington General Hospital at Tuscaloosa, Alabama. For the past year he has had a residency in internal medicine at Ancker Hospital, Saint Paul.

* * *

Thirteen neighborhood immunization clinics were held in Minneapolis during the week of March 29 to April 2. Infants and children of pre-school and elementary school age were given first immunization or booster inoculations against diphtheria. Smallpox vaccinations were also given as needed. Four weeks later the clinics were again held to give the second inoculation in the diphtheria immunization procedure.

The clinics were sponsored by the Minneapolis Health Action Committee and were conducted under the direction of the Minneapolis Health Department. Parents who were financially able were expected to pay 50 cents per child towards the cost of the service.

* * *

Plans to create a medical arts center in Northfield were announced on March 11 by Dr. Stanley T. Kucera of that city. The schedule called for construction to begin early this spring, and it was expected that the building would be ready for occupancy by fall.

Dr. Kucera and Dr. I. F. Seeley, who recently formed a partnership, will occupy the entire first floor of the north wing of the structure. Additional quarters will be available for other professional men, including space for a drug store.

During the middle of March, Dr. Kucera spent a week in New Orleans, taking a postgraduate course in surgery at Tulane University. Shortly after his return to Northfield, he was the principal speaker at a meeting of the Pre-School Mothers Club on March 23, where he discussed "Emergencies and Signs of Communicable Diseases."

* * *

Dr. Viktor O. Wilson, chief of the special services division of the Minnesota Department of Health, resigned his position, effective May 15, to become city health officer in Rochester. He succeeds Dr. F. M. Feldman, who resigned to go to Washington to become director of the central office of co-ordination and analysis of the tuberculosis study section, National Institute of Health, United States Public Health Service.

A graduate of the University of Minnesota Medical

School in 1931, Dr. Wilson interned at Ancker Hospital, Saint Paul, then studied pediatrics at two Chicago hospitals, engaged in private practice in pediatrics in Minneapolis, served on the staff at Ah-Gwah-Ching Sanatorium, and obtained his M.P.H. degree at Johns Hopkins in 1937. He joined the Minnesota Department of Health in 1937, serving as assistant director of the division of maternal and child health for two years and as director of the division from 1939 to 1946.

* * *

Among physicians attending a three-day continuation course in surgery at the University of Minnesota, April 8, 9 and 10, were Dr. Francis M. McCarten, Stillwater; Dr. F. F. Meyer, Faribault; Dr. Julius E. Haes, Mankato; Dr. W. Howard Parker, Chisholm; Dr. F. H. Baumgartner, Albany; Dr. C. W. Moberg, Detroit Lakes; Dr. William C. Heiam, Cook; Dr. Robert A. Glable, Plainview. Dr. K. L. Stensgaard, Thief River Falls; Dr. James J. Kolars, Dr. Carl W. Rumpf, and Dr. Donald J. Studer, all of Faribault, and Dr. Robert Delmore, Roseau.

Under the direction of Dr. Owen H. Wangensteen, chief of the Department of Surgery of the University Medical School, the course was designed to present newer concepts and developments in preoperative and postoperative care of patients Included in topics discussed were treatment of brain tumors, use of dyes in tumor diagnosis, treatment of burns, early ambulation, and present trends in combined anesthesia.

In discussing brucellosis at a meeting of the American College of Physicians in San Francisco during April, Dr. Wesley W. Spink, professor of medicine at the University of Minnesota, said that there are indications that the disease incidence is increasing both in domestic animals and in human beings. Dr. Spink urged the enactment of strict legislation to require the pastuerization of all animal milk used for human consumption, as a means of reducing the incidence of brucellosis in man.

He stated, however, that since no practical means exist for preventing individuals from contracting the disease by direct contact with infected animals, "the solution of this problem ultimately resides in the elimination of brucellosis from the animals. That," he said "would require the combined support of farmers, livestock producers, veterinarians, packing plant authorities and public health officials." The annual cost of the disease to the cattle industry alone in the United States, Dr. Spink stated, is almost $100,000,000.

HOSPITAL NEWS

Without waiting for Federal grants, Marshall will build its Weiner Memorial Hospital as soon as arrangements can be made, it was reported early in April.

Since Marshall is forty-seventh on the priority list of the state hospital plan, it probably would not be eligible for Federal aid for another two years. The city at present has a fund of $300,000 on hand, partly from a $150,000 bond issue which was approved in

1944, and partly from a presentation made by Ben and Julius Weiner in memory of their father, Louis Weiner.

With the state hospital plan relieving some of the pressure that would be on the proposed Marshall hospital, it has been recommended that a fifty-bed hospital be constructed rather than the eighty-bed one originally planned. Present costs may exceed $8,000 per bed. A fifteen-acre site for the hospital has already been purchased.

* * *

The Long Prairie Commercial Club, after listening to a talk by Dr. M. E. Mosby on Federal aid for hospital construction, decided at its meeting on March 16 to form a hospital committee to investigate the situation and gather information about it. Long Prairie is nineteenth on the priority list of the state hospital plan.

* * *

Though the Moose Lake State Hospital is one of the most modern state mental hospitals in Minnesota, Dr. Henry Hutchinson, superintendent, stated early in April that the hospital is admittedly in need of increased personnel and additional funds to provide better care for the mentally ill.

Dr. Hutchinson said that while the hospital had the advantages of better buildings and perhaps better food service, it would need five ward doctors instead of two, and double the attendant load, to meet the standards approved by medical authorities.

* * *

Mr. Louis W. Hill, Sr., Saint Paul, who died at the Miller Hospital on April 26, 1948, gave $500,000 to the hospital in February of this year for the construction of a new wing, to face College Avenue to the east of the present structure. Mr. Hill had also made previous donations to the institution. He was the son of J. J. Hill, and succeeded him as president of the Great Northern Railroad.

* * *

Beginning May 3, and continuing through May, June and July, Dr. D. A. Dukelow, Director of the Health and Medical Care Division of the Minneapolis Council of Social Agencies, will broadcast a series of health talks entitled "Let's Talk About Health." These broadcasts, under the sponsorship of the Community Chest and Council of Minneapolis and Hennepin County, will be made each Monday at 7:15 p.m. over KUOM.

* * *

At the ninetieth annual meeting of the Lutheran Minnesota Conference held at Center City, on May 6, it was decided to build two additional units to Bethesda Hospital, Saint Paul; a nurses' home at an estimated cost of $750,000, and accommodations for persons suffering from chronic ailments, with an estimated cost of $250,000. It was also decided to construct an addition to Trinity Hospital, Ashland, Wisconsin.

BLUE SHIELD NEWS

Persons covered by Blue Shield as of April 15, 1948—17,378
Number of Blue Shield cases paid on April 15, 1948— 130
Total for 1948— 212
Amount paid on Blue Shield cases on April 15, 1948—$4,908.05
Total for 1948—$8,215.43

Even though the Minnesota Blue Shield Plan sold its first contract in November, 1947 and paid its first

claim on January 15, 1948, there has been little publicity and no official announcement of its inauguration. On April 12 and 13, 1948, such a program was carried out with Dr. Paul R. Hawley, the newly appointed chief executive officer of the Blue Cross and the Blue Shield Commissions, launching the Plan.

Prior to accepting the post of chief executive officer of Blue Cross and Blue Shield, Dr. Hawley was a physician in the United States Army for thirty years, attaining the rank of Major General, and in World War II was responsible for the medical care of the troops in the European theater. After the war, he accepted the position of Chief Medical Officer of the Veterans Administration under General Omar Bradley. While with the Veterans Administration, he became known for his ability to cut government red tape and get things done, for his determination to "give the veterans the best in American medicine" and his insistance upon the "human touch" in the treatment of patients.

The highlight of the inauguration was the inaugural dinner held in the Grand Ballroom of the Coffman Memorial Union on the campus of the University of Minnesota on the evening of April 13, 1948.

More than 4,000 invitations were sent to persons throughout the state. All doctors, state representatives and senators were invited to attend. Also invited to attend were nurses, newspaper and magazine editors, leaders of industry and labor, leaders in the field of public health both locally and nationally, members of the clergy, Blue Cross and Blue Shield group leaders and all Blue Cross and Blue Shield office personnel.

More than 800 people attended the dinner and heard Dr. Hawley deliver the inaugural address which was broadcast from radio station WTCN at 9:30 p.m. The address was "An American Health Plan Based on the American Principle of Free Choice," after which the following exerpts were taken:

"There isn't any question but in America today we have the best medical care in the world. We have more doctors per capita in this country, and we have better doctors. American doctors are no longer going to Europe for their graduate studies and training. They are taking them right at home. In fact, European medical students are now coming over here—to America—for their final training. And we have more hospitals, more nurses, more x-ray technicians and other skilled health workers in America than any other country. Not only more, but the best trained doctors, the best hospitals, and the most hospital beds per capita than any other country.

"I spent thirty-two years in government service, and I can guarantee that our government is the most extravagant operated today.

"Now the answer to the cost problem, of course, is to split the cost of medical and hospital care over a long period of time. There are several ways of spreading the cost. One way is through compulsory government health insurance, and it is interesting to note that in all the government plans for government control, the word 'compulsory' is used. The government health insurance would mean the compulsory purchase of food, drugs, and other things. The socialization of

medicine would be the first step toward the nationalization of industry. And the nationalization of our health service would destroy the feeling of independence, personal responsibility and security which is so essential to our democratic society. The government has destroyed these virtual values whereever it has encroached upon the framework of individual enterprize and upon the personal responsibility and initiative of the individual person.

"There is only one alternative to compulsory government medicine. That alternative is voluntary medical and hospital care. Now, there are three types of voluntary health care:

"One such type is co-operative. The objection to this type of voluntary insurance is that is provides for no choice of physician and that it is difficult to get first class physicians to serve in a co-operative venture.

"The next type of voluntary insurance is the commercial carrier of insurance. In this type you must be careful to read your contract or policy thoroughly, especially the small print. Only a few reputable and reliable companies are selling health insurance, and there are a lot of little insurance companies putting out health policies and these are the ones of which you must be very careful.

"The third type—the voluntary prepayment plans—the Blue Cross and the Blue Shield Plans. First of all, these are nonprofit Plans and that means they can sell their services cheap. Secondly, they are underwritten by the people themselves and benefits are guaranteed by the hospitals in the cases of hospitalization, and by the doctors in the cases of medical and surgical care. Their contracts are clear, there is no fine print, and they preserve the American principle of free choice of hospital and physician.

"Blue Shield in Minnesota has clear objectives and a clear concept, and its enabling act provides for the free choice of physician. The law under which it operates prevents the practice of medicine as a corporation. Under Blue Shield you do not lose your benefits if you move from one state to another, or from one group to another. Every good citizen should be interested because it helps them to spread medical care to the people who need it. Families with low incomes should be interested because it provides a way for them to get medical care when they need it without jeopardizing them to finance it. Families with adequate, average income should be interested because sudden illnesses are provided for, and sudden illnesses can be expensive and wipe off the budget of the average income family. Industrialists and businessmen should be interested because this Plan, together with Blue Cross, is going to help prevent the nationalization of medicine. The nationalization of medicine, as I said before, is the first step toward the nationalization of all industry and of all free enterprize.

"Blue Cross Hospital Service Plan and the Blue Shield medical/surgical Plan are operated on a purely voluntary basis and provide for hospital expenses and the cost of physicians' services. Under such voluntary movements as these, a feeling of social responsibility and security is fostered among individuals, and this is essential to our democratic principle and society.

"As voluntary nonprofit agencies, Blue Cross and Blue Shield are the most successful media whereby services of our doctors and hospitals can be made available to the people on an economical basis. Each Plan is locally sponsored and locally controlled. Each operation is adjusted to meet local needs and existing facilities for health care. In other words, the Blue Cross and Blue Shield hospital and medical care plans are a part and parcel of our democracy. They represent the 'American Principal of Free Choice.' "

Blue Shield has now been launched in Minnesota and its growth and success is assured.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

DISEASES OF THE NOSE, THROAT AND EAR. William Lincoln Ballenger, M.D., F.A.C.S., Late Professor, School of Medicine, University of Illinois, Chicago; and Howard Charles Ballenger, M.D., F.A.C.S., Associate Professor and Acting Chairman of the Department of Otolaryngology, Northwestern University School of Medicine, Chicago; Surgeon, Department of Otolaryngology, Evanston Hospital, Evanston, Illinois; Assisted by John Jacob Ballenger, B.S., M.D., Research Fellow in Otolaryngology, Northwestern University School of Medicine, Chicago. 993 pages. Illus. Price, $12.50. Philadelphia: Lea & Febiger, 1947.

This revised edition is a highly recommendable textbook. There are not many others which cover the field of otolaryngology so thoroughly; any recent progress made in this field is included, adequately discussed and excellently illustrated. This is particularly true in regard to the subjects—rhinoplasty, radiation therapy and fenestration operation in otosclerosis. It is a most useful reference book for the postgraduate and practicing otolaryngologist.

JOHN J. HOCHFILZER, M.D.

HERNIA. L. F. Watson, M.D., F.I.C.S., 3rd edition. 732 pages. 323 illustrations. St. Louis: C. V. Mosby Co., 1948.

This edition of "Hernia" is a well-written, concise and profusely illustrated text on the subject of all types of hernias, as related to the abdominal portion of the body.

In the opening chapters the author discusses the general features of hernias occurring throughout the abdominal wall or in the abdominal cavity, and goes into considerable detail regarding anesthesia, surgical technique and the principles involved in treating complications.

Inguinal hernias are discussed completely throughout the text, and pathology and operative procedures are very well illustrated. All types of hernia repair in the inguinal region are considered and evaluated, with stress on the recurrence factors and the repair of the recurrent hernia. The various methods employed are thoroughly and concisely discussed, as well as the judgment involved in the choice of the type of repair to employ. The latter chapters of the book deal with the various types of hernias, such as ovarian, appendiceal, bladder and Meckel's diverticula hernias, as relating to the finding of these organs in the hernial sac. These are treated in detail, as they produce certain problems arising in the repair of the inguinal hernias.

The chapter on internal abdominal hernias is most interesting and complete. Each type is considered not only from the historical background, but as to definite operative procedures, the principles involved in the repair of the hernia, and how to correct it.

There are also chapters on the rare, seldom seen type of hernias, such as the obturator, sacral, perineal and lumbar types, which are completely discussed and illustrated. A chapter dealing with the injection treatment of hernias is complete, with a thorough consideration of the subject, and would be of interest

to any one interested in this phase of hernia repair.

One is impressed by the completeness of the text in treating the general subject of herniations, as they occur in the abdominal region. The material is up to date, and at the conclusion of each chapter there is a very complete bibliography containing the more recent medical literature, relative to the subject.

Because of the completeness with which the subject of hernias is treated in this text, this volume should be in the library of anyone doing general surgery, not only for reference, but also for general reading on any particular type of hernias with which he might be confronted and called upon to treat. As a reference book, its value cannot be stressed too strongly, the illustrations give a thorough presentation of the operative technique, as well as the pitfalls and complications in the surgical treatment of hernias.

E. W. MINTY, M.D.

REMINGTON'S PRACTICE OF PHARMACY. Ninth Edition. Edited by Prof. E. Fullerton Cook and Eric W. Martin, Philadelphia College of Pharmacy and Science. 1500 pages. Mack Publishing Company, 1948, Easton, Pennsylvania.

The Ninth Edition of Remington's Practice of Pharmacy, for more than sixty years the outstanding authority on the science and profession of pharmacy, will be available about June 1. This famous book has been completely rewritten from cover to cover by outstanding authorities in every phase of pharmaceutical practice, including hospital, manufacturing and retail pharmacy, as well as the allied sciences upon which the profession is built. The book consists of 1500 pages of the most modern scientific information available concerning pharmacy.

Since 1885, the "Remington" has been the most popular textbook on pharmacy. Leafing through the pages of the many editions reveals the story of the development of the two closely associated professions, pharmacy and medicine. As each new revision appeared, the latest developments in these two sciences and related fields were presented in a concise manner. The growth of the book has been phenomenal, and the new revision had a particularly auspicious beginning when the heirs of Professor Joseph P. Remington, original author of the book, turned the copyright of the book over to his alma mater, the Philadelphia College of Pharmacy and Science, so

that the proceeds from its sales would be used for pharmaceutical education. The new edition is being translated into Spanish for distribution throughout South America, and will undoubtedly become the recognized authority on pharmaceutical practice in the entire Western Hemisphere.

The editor-in-chief of the ninth edition, Professor E. Fullerton Cook, internationally known as a teacher, editor and pharmacopœial authority, and the co-editor, Eric W. Martin, pharmaceutical and chemical consultant, have assembled an editorial staff of more than forty specialists, including experts in pharmacy, chemistry, the biological sciences, research, therapeutics, pharmacology, and practical pharmacy.

Never has a more comprehensive accumulation of up-to-the-minute information been blended by editors into such a logical presentation for educators, students, pharmacists, physicians, and agencies advertising pharmaceutical products.

In the ninth edition of the "Remington" will be found many newly developing phases of the biological, physical and chemical sciences. All the latest organic medicinals are extensively treated both from the chemical and therapeutic standpoint. The antibiotics (penicillin, streptomycin, et cetera), hormones, vitamins, surface active agents, quaternary ammonium bactericides, analgesics, anesthetics, sulfonamides, antihistaminic agents, amino acids, enzymes, steroids, and countless other subjects have all been treated comprehensively by a nationally known authority in each field.

The book is an unexcelled manual for teachers, a refresher course for the practicing pharmacist, a guide to modern therapeutics for the intern and physician, and a valued reference for pharmaceutical detail men, chemical firms, librarians and research workers.

PATHOLOGY OF TUMOURS. R. A. Willis, D.Sc., M.D., F.R.C.P. Sir William H. Collins Professor of Human and Comparative Pathology, Royal College of Surgeons, London; formerly Pathologist to the Alfred Hospital, Consultant Pathologist to the Austin Hospital for Chronic Diseases and Lecturer on the Pathology of Tumours in the University of Melbourne, Australia. 992 pages. Illus. London, England, Butterworth & Co. (Publishers), Ltd.; St. Louis, C. V. Mosby Company, 1948. Price $20.00.

As the author states, this book is the outcome of his special interest in tumors during twenty years as a hospital pathologist. Rather than give the usual didactic presentation of the subject, the author has given his own experience and even in controversial matters has plainly stated his own opinions. Of special interest are the chapters on the comparative pathology of tumors and experimental production of tumors.

Because of its general excellence, it is hard to select one chapter that is superior to another. The illustrations are exceptionally lucid; a workable index is listed. This book is highly recommended for the pathologist, the clinician and the student.

C. E. Rea

Classified Advertising

Replies to advertisements should be mailed in care of MINNESOTA MEDICINE, *2642 University Avenue, Saint Paul 4, Minn.*

SPLENDID OPPORTUNITY—For young physician-surgeon, also druggist in town of 600 with large diversified farming area population. Write Secretary, Verndale Commercial Club, Verndale, Minnesota.

WANTED—Physician as associate leading to partnership or buying very good practice, 25 miles from Saint Paul. Address E-69, care MINNESOTA MEDICINE.

WANTED—Doctor to take over my general practice next September and October. Address E-84, care MINNESOTA MEDICINE.

WANTED OFFICE NURSE—As receptionist and physician's assistant for general office work in small southeastern Minnesota city. New attractive offices, nice hours, good salary. State age, school of graduation, previous experience (not required) if any, references and salary desired. Address E-82, care MINNESOTA MEDICINE.

FOR SALE—Communications receiver, Hammarlund SP400X. Excellent for world-wide long and short wave coverage. Receiver is six months old, used very little. Original cost $347.25; will sell for $300.00. Address E-83, care MINNESOTA MEDICINE.

FOR SALE—100 M.A. x-ray unit, not shock proof, crank-operated table, 2 tubes (one fluoroscopic mounted in table) in good operating condition. Reason for selling: replacing with a 200 M.A. unit. Price $300.00 includes transporting, installing and calibrating at any location not too distant from Twin Cities. Address E-77, care MINNESOTA MEDICINE.

WANTED—Assistant for general practice with view to permanent association by doctor with excellently equipped small clinic. An internist or man with special training preferred. Give complete personal and professional qualifications and references. Address E-78, care MINNESOTA MEDICINE.

WANTED—Young physician capable of doing general practice, including surgery, at Sunburst, Montana. Monthly retainer fee from an oil company. Paved road to nearby hospital. Good opportunity for immediate income. Write E-72, care MINNESOTA MEDICINE.

FOR SALE—Six-room, 3 bedroom house, attached garage, combination 4-room office suite, 100 x 150 foot grounds. At a bargain. Lucrative practice, equipment and records included. East Central Minnesota village. Retiring next July. Address E-65, care MINNESOTA MEDICINE.

WANTED—Resident physician at St. Luke's Hospital, St. Paul, July 1, 1948. Address Superintendent.

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PROFESSIONAL MEDICAL ILLUSTRATOR—Accurate drawings made from case reports or written descriptions. Charts, graphs, exhibits prepared. References. Reasonable rates. Address Herbert Hunter, Box 86, Star Prairie, Wisconsin.

FOR SALE—Complete x-ray equipment in good condition; also all-Victor electrical treatments, several pieces. Pay for Bucky, x-ray table and equipment, and all rest will be thrown in. Time to pay, if desired. Bargain. Address E-61, care MINNESOTA MEDICINE.

FOR RENT—Four desirable offices for professional men. Midway district Twin Cities. Address Mrs. J. E. Roby, 3301 Clinton Avenue, Minneapolis 8, Minnesota. Telephone LOcust 7070.

FOR SALE—Practice and equipment, records, obstetric and active cases. All at price of new equipment, for quick disposal. Can begin immediately. Excellent opportunity. Good hospital, town 15,000, one hour from Minneapolis. (Must have Minnesota license or reciprocity). Going into clinic. Address E-85, care MINNESOTA MEDICINE.

POSITIONS FOR INTERNS—St. Joseph's Hospital, Saint Paul, Minnesota, has two positions available July 1, 1948, for second-year interns. Salary $300 per month and maintenance. Write or contact Superintendent of Hospital.

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- Pathologist wanted for hospital, $10,000, plus teaching position in college, if desired.
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